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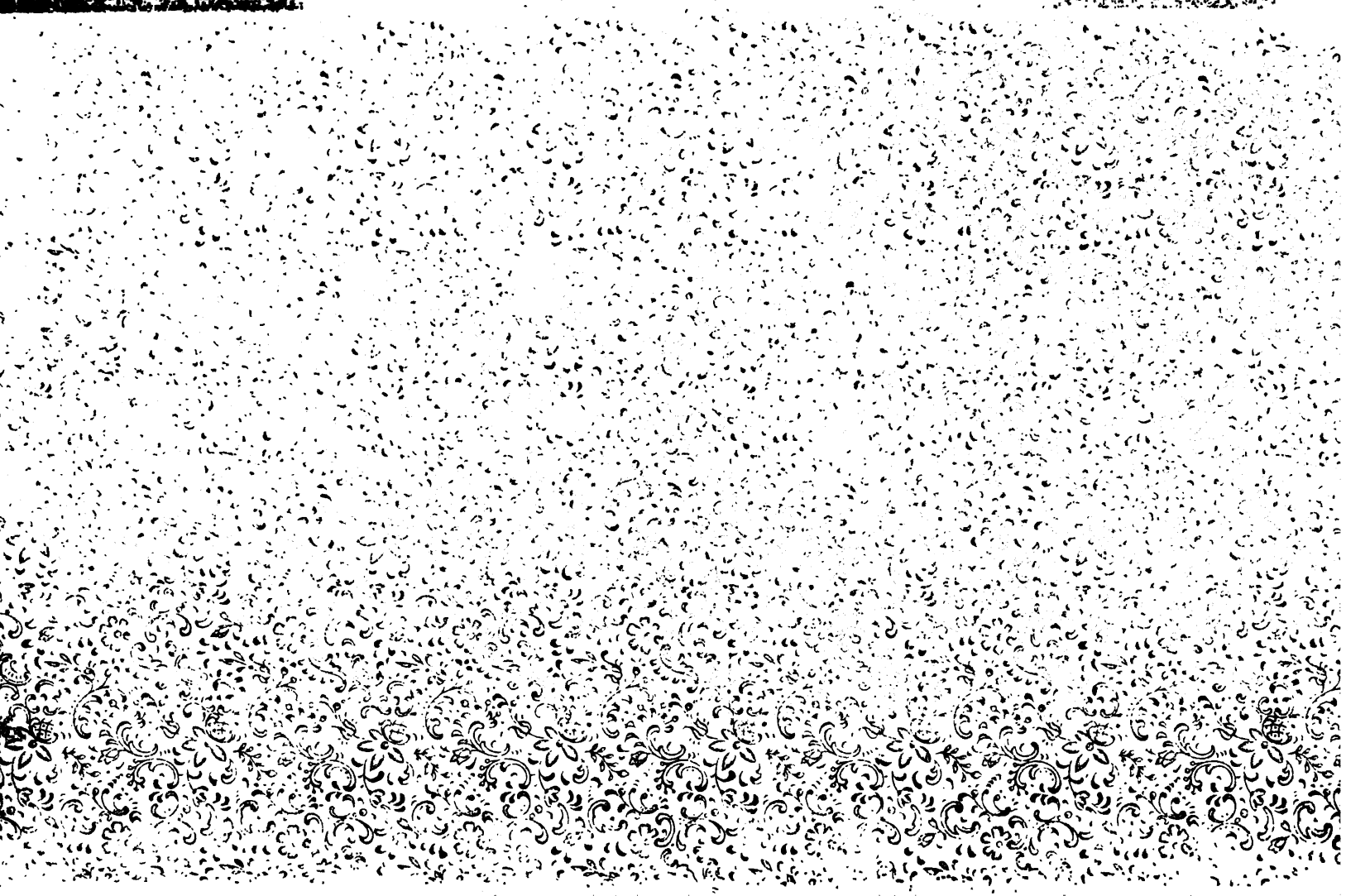

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THE STATE CAPITOL, OLYMPIA, WASH.

AGRICULTURAL, MANUFACTURING AND COMMERCIAL

RESOURCES AND CAPABILITIES

—OF—

WASHINGTON

1901

PUBLISHED FOR

GRATUITOUS DISTRIBUTION

BY THE

BUREAU OF STATISTICS, AGRICULTURE AND IMMIGRATION.

A. W. FRATER,
Deputy Commissioner.

SAM H. NICHOLS,
Ex-officio Commissioner.

OLYMPIA, WASH.:
GWIN HICKS, . . . STATE PRINTER
1901.

BUREAU OF STATISTICS, AGRICULTURE AND IMMIGRATION,
OLYMPIA, WASH., June 20, 1901.

To His Excellency John R. Rogers, Governor of Washington:

SIR — We have the honor to transmit herewith, the 1901 Report of the Bureau of Statistics, Agriculture and Immigration.

Very respectfully,

A. W. FRATER,
Deputy Commissioner.

SAM H. NICHOLS,
Secretary of State,
Ex-officio Commissioner.

INTRODUCTORY.

OFFICE OF THE BUREAU OF STATISTICS, AGRICULTURE AND IMMIGRATION,

OLYMPIA, WASHINGTON, July 20, 1901.

In presenting this report to the public, we deem it proper to state that, owing to the failure of the legislatures of 1897 and 1899 to make appropriations for this Bureau, no reports have been published since 1896, and the issue of that year is exhausted. This being the case and the demand for information as to the resources of the State being so general and urgent, we have been prompted thus early to issue a report, which of necessity is largely descriptive in character, rather than being confined to statistical figures.

In compliance with the law which requires the Bureau to promptly answer all proper inquiries relative to the State, received by mail or otherwise, the Deputy Commissioner, on assuming office, prepared a circular letter giving in brief a statement intended to meet the requirements until the necessary data could be gathered and compiled for an intelligent work in book form. This circular letter has been mailed to several hundred applicants, most of whom made inquiries as to our agricultural resources and lands, for the development of which there is the most urgent need and demand.

We have endeavored to give a conservative and concise review of the State, with a brief historical sketch, touching on its vast, varied and boundless resources. It is not only intended as an immigration document, but it is intended to

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be helpful in promoting the prosperity of our citizens, many of whom are as yet unacquainted with the character of our soil, and the value and magnitude of our other resources. To those interested in agriculture and kindred pursuits, in which we include dairying and stock raising, we would say that you have the benefit of the experienced observations and conclusions of Professors Spillman, Elliott and Fulmer, instructors in the State Agricultural College at Pullman. The historical sketch was prepared by Hon. Edmond S. Meany, professor of history in the University of Washington, and the article on "Puget Sound" by Thos. W. Prosch. Those interested in the geology of the State are presented with an instructive article, especially prepared for this work, by Professor Henry Landes, State Geologist, and professor of geology and mineralogy of the University of Washington. On climatology you will find a most elaborate, accurate and and scientific article prepared by G. W. Salisbury, division director of the United States weather bureau, at Seattle. On lumber resources you have the benefit of the knowledge of that subject only possessed by Victor H. Beckman, secretary of the Pacific Coast Lumber Manufacturers' Association. And in addition to all of these you have the benefit of the special knowledge possessed by the heads of the various departments of state, who have personally rendered valuable assistance, and from whose reports we have drawn freely in the compilation of this book. We claim nothing for ourselves, except that we have endeavored to deal with facts, and we confidently assert, that in no sense have the resources of our State been over-valued, but on the contrary not half that might truthfully have been claimed has been set forth, and no doubt what is herein contained will be helpful in promoting immigration, since our boundless pos-

sibilities, healthful climate and unlimited opportunities for advancement must appeal to thousands living in less favored states and communities.

We also believe that this work will be beneficial in promoting industrial and commercial enterprises, as the conservative facts herein stated as to our natural resources and advantages, and our location from a commercial standpoint, commanding, as we do, the Oriental, Alaskan, insular, and Pacific coast trade, must appeal strongly to capitalists seeking investments and to manufacturers desirous of securing advantageous locations.

The efforts of this Bureau to obtain reliable data from those whose duty it is by law to assist, has been unavailing in many cases, and if the citizens of any of the counties feel that their descriptive reports are brief and unsatisfactory, they are requested to inquire for the cause from their officers and commercial bodies.

It is our intention to supplement this report before the next session of the legislature convenes, in which supplement will be summarized the results of our efforts in promoting a healthy and desirable immigration, and we hope to submit with it a great deal of statistical data, together with recommendations for the future needs of the Bureau.

SAM H. NICHOLS,
Ex-Officio Commissioner.

A. W. FRATER,
Deputy Commissioner.

HISTORICAL SKETCH OF THE STATE.

Older communities in the eastern states are apt to think of the State of Washington as being so young that its history is only in the formative period. Of course, in some respects this is true. For three dozen years the commonwealth was on probation as a territory, and since that period there has been but a single dozen of years of statehood. During those four dozen years the nation has passed through some of its most important epochs of history, such as the culmination of the Kansas-Nebraska struggle, the great Civil War and the consequent period of reconstruction. Washington was too young and too remote to experience a very large or very active participation in those stirring events, and yet there was some contact with that portion of national history, and back of that period there lies a history that must not be overlooked. Besides the thrilling record of explorations by land and by sea, the settlers passed through the trials, dangers and sufferings incident to all occasions when civilized races have come in contact and into conflict with savage or barbarous races occupying a desired region. In these experiences of the pioneer settlers of Washington may be traced the experiences or history of the successive settlements of America's receding frontier. As Kentucky was a colony of Virginia and her neighbors, as Ohio was a colony of New England and Virginia, so Washington was a colony of numerous eastern states. A recent French writer has said that a colony is to history what a mountain is to geology. It brings past forms to view. From such a view point, the study of our own State history is sure to be of interest to thoughtful readers, and it is likewise sure to grow in importance as the knowledge of the broader national topics deepens through constant research.

For the purposes of the work now in hand it will be best to trace the subject in outline. Every reader will know that future students and writers will delve into the sources for fuller information about each of the topics touched.

VOYAGES OF DISCOVERY.

It is quite familiar to every reader that in the latter half of the fifteenth century Spain and Portugal were the great exploring nations. Their successes caused Pope Alexander VI to issue his famous bull dividing the new worlds between those two powers, and thus we find Portugal working around the Cape of Good Hope to the east and Spain pushing across the Atlantic to the new world, and across that new world to the new ocean which extended on to that "east," which in the new partition was supposed to belong to Portugal. Of course, the world soon realized that the two nations thus favored could not enjoy their wealth without dispute, and other explorers appear. Let us consider each of these as they have come to our own northwestern shores and thus commenced our recorded history.

Spanish Voyages.

The Spaniard enters our subject with all the glamour of mediæval brilliance of raiment and accouterment, and with an utter abandon toward unknown and untried danger. Twenty-one years after Columbus made his first voyage Balboa discovered the "South Sea," and on September 29, 1513, boldly took possession for the crown of Spain of all the lands and islands washed by it. Six years later two great events occurred: Magellan started on the first voyage around the world and Cortes went to Mexico. The latter's great feat of conquering the Aztecs was duplicated by Pizzaro among the Toltecs of Peru from 1526 to 1531. Cortes ruled his new province from 1522 to 1530, when his power was divided, though for ten years more he held command of the army. At the end of that time he returned home, received a very cool greeting from Emperor Charles V, and died in obscurity, December 2, 1547. During the decade 1530 to 1540 he caused to be made some important discoveries. His sailors crept along the coasts of the Pacific toward the north and he chose for the new lands a name that had first appeared in a Spanish romance in 1510. The name California comes from two Spanish words meaning "hot furnace," and was applied to the new lands under the direction of Cortes in 1535.

In 1539 Ulloa sailed along the coasts of lower California, and others followed him until the larger expedition of 1540-1543. This was in command of Juan Rodriguez Cabrillo, who has the

A SEATTLE VIEW FROM THE WATERFRONT.

honor of being the first to sail along the whole coast of California. He named the Sierra Nevada mountains, the Point of Pines at the mouth of Monterey bay, and entered the harbor of San Diego. After breaking an arm he sailed south to an island now called San Miguel, but which he called "La Isla de la Posesion." Here he died of his injuries on January 3, 1543, and his last words were a command to his "piloto," Bartolome Ferrelo: "Sail northward at all hazards." This command was obeyed, and on March 1, 1543, Ferrelo passed the 42d degree of north latitude and was thus the first white man to gaze upon the soil of old Oregon.

In 1603 three Spaniards—Sebastian Vizcaino, Martin Aquilar, Antonio Flores—visited our coasts, but did no work that has endured.

Juan Perez in 1774 reached the latitude of the present Sitka and coasted toward the south. He had been instructed to make no settlements, but to take possession of the land and pick out the best places for settlements. Cape North on Queen Charlotte island he called "Punta Santa Margarita." What we know as Forrester island he called "Isla Santa Christina," and Point Muzon he named "Santa Maria Magdalena." On the 7th of August he made a "landfall" at a place which he called "San Lorenzo," but which we know as Nootka sound. He was the first white man to visit that place, yet the Indians who came out in their canoes held up bits of iron and copper and by pantomime signified that they wanted to trade for more. On August 10th he sighted a snow-white mountain which he called Santa Rosalia. Fifteen years later an English captain renamed it Olympus. The records claim that he was driven back from what has since been noted as a rainy country by thirst.

The next year, 1775, Bruno Heceta and Bodega y Quadra made a famous voyage along our coasts. Heceta had the flagship Santiago, and Quadra had a little schooner, the Sonora, only 36 feet long, 12 feet wide and 8 feet deep. They had 106 men in the party, and were ordered to sail and explore as far as 65 degrees of north latitude. They discovered and named Point Trinidad in northern California, and on July 13th they reached the vicinity of the present Point Grenville on the Washington coast. On July 14th Captain Heceta, Padre Sierra, Surgeon Davales, Second Pilot Cristobal Reveilla, landed, erected a

cross, at its foot they planted a bottle filled with records, and then went through the form of taking possession of the soil for Spain. These were the first white men to set foot on the soil of the great Northwest. A little to the north lay the schooner Sonora. The Indians seemed friendly and wanted to trade for iron and copper. Quadra, needing wood and water, sent Boatswain Pedro Santa Ana with six men in a small boat to land. On reaching shore the boat was immediately surrounded by 300 savages. Two of the sailors jumped into the sea and were drowned. The others were instantly murdered and the boat was torn to pieces for the metal fastenings. Quadra was furious, and wanted to land with thirty men to punish the savages. Heceta and the other officers decided against this, and Quadra was finally allowed to proceed on his journey. There seems to have been a secret agreement between the two captains to defeat the junta or council of officers, for at the first storm at sea the vessels parted and Quadra went north to carry on a wonderful work in his little sloop as far as 58 degrees of north latitude. He kept at the work until he and his men were stricken down with the scurvy. Bodega bay, just north of San Francisco, was discovered and named in honor of the brave captain. Upon parting with Quadra, Heceta sailed southward. Quadra had called the island where his men were murdered "Isla de las Dolores," the Island of Sorrows. Like troubles gave it a similar name in later years, for to this day it is called Destruction island. Nearing this place Heceta tried in vain to punish the savages. On August 17th he discovered a bay with signs of a river, which he called "Bahia de la Asuncion." The north cape he called "San Roque," and the south one he named "Cabo Frondoso." He was unable to explore his discovery, for he did not have well men enough to hoist the anchor if he should once cast it. Later the Spaniards called the bay "Entrada de Heceta." Seventeen years later the river was actually discovered by a Yankee, who named it Columbia, after his vessel.

In 1789 Estavano Martinez in the Princessa, and Gonzalo Lopez in the San Carlos, sailed to the northwest coast. They were instructed to conciliate the natives, take along friars, erect buildings for a colony and fortifications for defense and sovereignty, and to treat all Russians and Englishmen courteously but firmly. The San Carlos was to explore the coast between

50 and 55 degrees of north latitude. They arrived at San Lorenzo on May 6, 1789, and changed the name of the place to Santa Cruz de Nutka. At first Martinez obeyed his instructions by treating the Englishmen with courtesy, but later he stirred up trouble which culminated in the Nootka treaty of October 28, 1790, which practically decided that our neighbor to the north should be a British Columbia instead of a Spanish Columbia. On May 14, 1789, he seized the Iphigenia, Captain Douglas, but on May 26th he seems to have regretted his rashness, for he returned the vessel entirely refitted, and Captain Douglas gave him a signed document stating that he had been properly treated and agreeing to turn over a new sloop and to pay the price of his own vessel if it was found that she had been a proper prize to the Spaniards. The drafts were found to be of no value, and the sloop North West America was seized upon arrival, as was also the Argonaut, Captain Colnett. These vessels were taken to San Blas, Mexico, but were later restored in good condition to their owners, and the crews were paid at the rates prevailing in the Spanish navy. The whole proceeding was witnessed by two American captains, who gave testimony upholding the Spaniards, but England forced the issue and won.

In the year 1790 three Spanish captains visited this northwest coast. They were Francisco Elisa, Salvador Fidalgo and Alferez Manuel Quimper. By the 10th of April they had all arrived at Nootka and went through the formal act of taking possession of the land. This was rather bold, considering that Spain and England were preparing for what seemed sure war over the troubles precipitated by Martinez the year before. On May 4th Fidalgo started for his work of exploring the northern coasts. He returned to San Blas on November 14th. On May 31st Elisa had sent Quimper in the Princessa Real (the Spanish name for the English sloop Princess Royal, which was to have been returned to Captain Colnett, but which was used for explorations and was finally delivered to Colnett by Quimper at the Hawaiian islands in 1791), to explore the Straits of Juan de Fuca. H. H. Bancroft, Vol. XXVII, page 242, reproduces his map, showing a number of names that have since disappeared. He found the mouth of Admiralty inlet and called it "Ensenada de Camaano," a name that still survives at a different place, on the island between Whidby island and the mainland. Port Dis-

covery was first seen by Quimper and named "Porto de la Bodega y Quadra." Dungeness he called "Porto y Bahia de Quimper," taking to himself an honor that was shattered two years later by Vancouver. Rosario straits he called "Boca de Fidalgo," which name we also find shifted to an island. His name "Canal de Lopez de Haro" we still have with us at its original place, but in shortened form. In the more complete map by Elisa for 1791 is shown the name "Porto de Nuestra Senora de los Angeles." It is quite likely that that was one of Quimper's names. It still survives as Port Angeles.

Captain Elisa, with his garrison, had wintered at Nootka, while Quimper being driven south from Nunez Gaona (Neah bay), returned to Monterey. Early in 1791 Elisa was joined by Guyraldo, Arriago and Narvaez. Being instructed to explore from Mt. St. Elias to Port Trinidad, Elisa set out boldly enough, but contrary winds kept him in the south. So he explored Clayoquot sound and the Straits of Juan de Fuca. He named many places, but how thankful should the American schoolboy be that those names have not endured! When he is told to study the Gulf of Georgia, how would he like to call it "Gran Canal de Nuestra Senora del Rosario Marinera?" Elisa explored that great body of water as far north as Texada island, and wrote to the Viceroy of Spain in Mexico: "It appears that the oceanic passage so zealously sought by foreigners, if there is one, cannot be elsewhere than by this great channel." He was referring to the long-sought water passage from the Atlantic to the Pacific. It was the same passage that John Smith and others sought by sailing up the James, the York and Potomac rivers from the Atlantic side.

On August 13th two corvettes under command of Alejandro Malaspina arrived at Nootka. He was on a tour of the world for scientific research. His name is written on one of the great glaciers of Alaska. Arriving in Mexico he loaned two of his officers, Dionisio Galiano and Cayetano Valdes, to Viceroy Gigedo, who sent them north in 1792 to explore the lands heretofore casually visited. They resurveyed the Gulf of Georgia to Texada island. On June 21st they met Vancouver and exchanged courtesies. Galiano told Vancouver that he had on the day before noted the presence of a river flowing from the north. Vancouver assured him that there was no such river in that vicinity.

About fourteen years after that Simon Fraser had his name written permanently upon the great river that Galiano came so near discovering. These two Spanish captains sailed north through the Gulf of Georgia, and thus demonstrated that Nootka was a harbor on an island. On their way south they looked in at "Entrada de Heceta" to see if it really was in that place where the Yankee Captain Gray had that year discovered and named the Columbia river.

During this same year, 1792, Jacinto Camaano had explored around Queen Charlotte island. Dixon Entrance he named "Entrada de Perez." And during this year Fidalgo returned and built a sort of fortification at Neah bay, which was abandoned inside of a year. The late Judge James G. Swan, of Port Townsend, found at Neah bay some old bricks which are thought to have been remnants of that old temporary Spanish fortification.

The year 1792 had also been fixed as the date for the commissioners of Spain and England to meet at Nootka to carry out the terms of the treaty of 1790. England's commissioner was Captain George Vancouver, while the crown of Spain was to be represented by Don Juan Francisco de la Bodega y Quadra, the captain of the little Sonora in 1775, who had steadily climbed to the top rung of his profession on the Pacific coast. The two men became warm friends, but could not agree as to the terms of the treaty. They sent home for further instructions, but the Spanish Don died in 1794 and the English captain sailed home. Their places were taken by General Jose Manuel de Alava and Lieutenant Thomas Pierce. On March 23, 1795, these two, at Nootka, hauled down simultaneously the flags of their respective sovereigns and Nootka was abandoned forever. From that day to this the Spanish flag has never fluttered as an emblem of sovereignty over lands north of California.

Russian Voyages.

Russia's share in the work of discovering and occupying North America was confined almost wholly to Alaska, and yet her contact with Northwestern history is of sufficient importance to demand attention in any sketch of that development.

When Michael Romanoff, of the National Party, came to power in Russia in 1613 the wild Cossacks had already begun to roam over the Siberian steppes and plains in search of walrus

ivory, gold and furs. Fossil ivory from the tusks of the extinct mammoth was discovered in 1639 along the banks of the rivers and coasts of the Pacific. From 1650 to 1700 the Russians had explored the coast of the Pacific along the Kamchatka peninsula. From 1682 to 1725 Russia was ruled by her greatest monarch — Peter the Great.

After enlarging and strengthening his domain this czar desired to learn the eastern limits of his empire. He planned an elaborate expedition to explore the coasts and especially to learn if Asia and America were united. The expedition was to be commanded by one of his imported naval officers — Vitus Bering, a Dane. The American coasts were to be explored until there was found a settlement by some European power. The harbors of Asia were also to be visited. Peter died in 1725 and was succeeded by his widow, Catherine I (1725-1727), who furthered his plans. Peter II (1727-1730) was the monarch under whom the expedition actually did its work.

Following the elaborate instructions of Peter's plan, Bering made his way with great difficulty to the Pacific. The winter of 1727-28 was spent getting across the Kamchatka peninsula, as it was not then known that the Okhotsk sea was an arm of the ocean. He arrived on the lower Kamchatka river on March 11, 1728, and began the construction of the vessel which he called the Gabriel. The timber he hauled to the shipyard by dogs; tar they prepared themselves, while the rigging, cables and anchors they had dragged for 2,000 miles over one of the most desolate portions of the earth. Their provisions were scant and consisted of fish oil, dried fish and spirits distilled under Cossack directions from "sweet straw."

On July 9th they started down the river, and on the 13th the sails were hoisted for the cruise. The ship's crew consisted of forty-four men, and they were rather curiously apportioned to the work as follows: One captain, two lieutenants, one second lieutenant, one physician, one quartermaster, eight sailors, one saddler, one rope maker, five carpenters, one bailiff, two Cossacks, nine soldiers, six servants, one drummer and two interpreters.

They sailed mostly along the Asiatic coast, and when at the narrowest part of the strait the weather must have been cloudy, as they did not see the American shore. They reached 67 de-

grees and 18 minutes of north latitude, and then returning reached Kamchatka on September 2, 1728. Thus was one portion of the great Peter's plan completed, for it was learned that Asia and America were not united. Later, the narrow strait separating the two great hemispheres was named in honor of the captain of this expedition.

In 1739 Martin Spangberg, who had been one of Bering's officers, and William Walton proved that the Okhotsk sea was an arm of the Pacific, by sailing through the Kurile chain of islands to Japan.

What is known to the Russians as the Great Expedition took place in 1741. Again Vitus Bering was in command. His vessel was the St. Peter. His chief lieutenant was Captain Alexei Cherikoff, who had been with him in the former expedition. This time he commanded a ship called St. Paul. They sailed from the Bay of Avatcha on June 4, 1741, and on June 21st the ships were separated in a gale. Cherikoff sailed eastward and sighted land at 56 degrees. He sent ten men in a boat to make examinations along the shore. They did not return. He sent six more after them. These shared a like fate. Cherikoff then hurried back to Kamchatka. He had lost twenty men and accomplished but little of value.

On July 18, 1741, Bering sighted land at 60 degrees and saw a great snow-white mountain, and as it was the day of St. Elijah he called it St. Elias. Men went ashore on an island. Dr. G. W. Steller, the surgeon, wished to tarry long enough to gather herbs to cure the scurvy that had attacked the men, but the officers insisted on hurrying back. Many islands were noted, and in latitude 55 degrees and 30 minutes a group of ten islands was discovered. Here a sailor died and was given a sea burial, and as it was the first death in the party the group was named in honor of the sailor — Schumagin islands.

Many of the men, including the captain, were sick. The officers quarreled and confusion reigned. Approaching land in 55 degrees of latitude they decided to go into winter quarters on November 5, 1741. They landed and built huts of driftwood, and the frozen bodies of foxes, which were so little alarmed at their new visitors that they were easily killed with clubs. On November 10th the sick captain was brought ashore and lodged in a hut. On November 25th the St. Peter was blown ashore

and was a wreck, furnishing plenty of material for more huts and also for the structure of a boat in which the remnant of the party escaped to Kamchatka in the following spring. The sand caved down upon the sick captain's body. They dug it away, but the captain begged them to leave it so, as it was warmer. On December 8th he died and his men dug him out of the sand pit to give him decent burial. Thirty of the crew died and were buried there. To this day that granite island, rearing its bleak head from the Northern sea, bears the grave and name of that great commander. The Russians, to further honor him, have named the group of islands there Commandorski.

The life and guiding spirit of this shattered expedition was Dr. G. W. Steller. In the hour of trial he was physician and commander. He kept the records of the expedition, and when the remnant escaped he informed the world of the discovery on that island of four great beasts new to science. These were the sea-cow (*Rytima gigas*), now extinct; sea-bear or fur seal (*Callorhinus ursinus*), one of the world's greatest fur producers; sea-lion (*Eumetopias stelleri*); sea-dog (*Enhydra lutris*)—this is the sea otter, whose beautiful coat often brings as high as $500. This noted scientist, who did so much for the expedition that discovered Alaska, was not honored by the naming for him of the smallest island. In later years Dr. Leonhard Stejneger, of the Smithsonian Institution, sought to repair this unfair oversight. He named the principal hill on Bering island "Steller Mountain." A great natural stone arch on the island he named "Steller's Triumphal Arch."

The furs brought home by this party were of such great value that there was a boom in fur hunting. Swarms of men pushed out along the "Fox" or Aleutian islands. They often embarked in boats that were mere boxes fastened together with leather thongs in the absence of metal fastenings. As late as 1806 Krusenstern reports that one-third of all such vessels were lost each year.

Two voyages of discovery were made in the years 1766 and 1767 by Lieutenant Synd, but nothing is known of them, as all information was completely suppressed by Empress Catherine II.

Captains Krenitzin and Levaschef sailed to the Aleutian islands in 1768 and passed the winter there. Krenitzin was

TACOMA HARBOR SCENE. SHOWING LARGEST WHEAT WAREHOUSE IN THE WORLD

drowned. Shipwreck, attacks from natives and other misfortunes were encountered. Though intended as a geographical expedition, about the only good accomplished was the collection of information about the fur trade.

In 1771 Count Maurice de Benyowsky, a Hungarian, placed himself at the head of a party of Poles, political prisoners in Siberia, and overpowered a Russian garrison at Bolschevetsh and put to sea. They were driven north to 66 degrees and were the first to see land on both sides of the straits. Returning, they visited the Aleutian islands and brought up at Canton, China, thus being the first to sail from Siberia to a port visited by Europeans.

When the Cossacks advanced across Siberia there preceded them a free-booting advance guard, reckless of all law, whom the Russians called promyshleniki. They were among the earliest on the Fox islands, and soon surmised that the fur seals had breeding grounds to the north, for they observed each year herds of seals going in that direction, and later they returned, accompanied by many young seals. This surmise was strengthened by an Aleut tradition, commemorated in a native song, that a young chieftain had wandered away from his home at Unimak in his canoe and had drifted to Amik, the home of the seal. When the furs became scarce on the other islands search was begun for Amik. In 1786 Master Gerassim Pribilof joined in that search, and after toilsome voyaging he found an island which he named after his vessel, St. George. He sent hunters ashore and hastened back to throw others off his course. On June 29, 1787, his men discovered another island, which they named after the saints of the day St. Peter and St. Paul. It is now known as St. Paul. Thus were discovered the famous Pribilof islands. Shelikof, in a letter dated at Okhotsh, 1789, stated that the first year's catch on the newly discovered islands included 40,000 fur seals, 2,000 sea otters, 14,400 pounds of walrus ivory and more whalebone than the ship could carry.

Then there appears the Russian fur monopoly, and on August 18, 1790, Alexander Andreivich Baranoff became its manager. He ruled an autocrat in Alaska for three decades. He said: "My first steps into these regions were attended with misfortune, but perhaps I shall be permitted to conquer in the end. I will either vanquish a cruel fate or fall under its repeated blows."

After many thrilling experiences he bartered with an Indian chief for land, and at once began cutting down trees to erect Sitka, his capital. Trade thrived, and for many years the only currency was furs. The Russians' treatment of the natives seems well expressed in the familiar saying: "God is far above and the Tsar is far away."

Russia was by no means contented with Alaska and the islands. They traded along the coast to the south and established a post called Fort Ross, at Bodega bay, just north of San Francisco. John Quincy Adams, while secretary of state in President Monroe's cabinet, learned that Russia claimed the whole coast from the Frozen Sea to the Umpqua river. He informed Russia's minister, Tuyl, on July 17, 1823, that the time had passed for Europeans to colonize on the American continent, and the United States would view such attempts as unfriendly. On April 17, 1824, was concluded the treaty with Russia fixing the boundary between the claims of the two powers at 54 degrees and 40 minutes. Thus Russia's contact with our northwestern history furnished the immediate cause for the announcement of the famous Monroe Doctrine on December 20, 1823, and also the famous political battle cry of 1844 of "Fifty-four forty or fight!"

The Mexican government was unable to oust Russia from Bodega bay, but in 1841 Fort Ross was abandoned on request of the United States. This turned out to be a very opportune move on our part, for a few years later witnessed our conquest of California, and Fort Ross might then have proved troublesome to the United States.

On March 30, 1867, the treaty was completed by which the United States purchased from Russia the whole territory of Alaska for $7,200,000, and Russian dominion in America vanished.

English Voyages.

A friend in the medical profession, who is regarded as a man of wide information, once expressed surprise on learning that we had anything of historic record for this northwest coast that antedated the landing of the pilgrims at Plymouth Rock. His surprise changed to incredulity when I claimed that we even had a "New England" on the Pacific coast near half a century before the famous Captain John Smith gave that title to the coasts that afterward became the northeastern part of the United States. But all this is a matter easily proved.

Francis Drake, the "Sea King of Dover," is less often thought of in connection with American history than is John Smith, but the record of his circumnavigation of the globe must always be of great interest to students of our northwestern history, for it was he who gave our shores the title of "New England."

On August 9, 1573, Drake arrived at Plymouth, England, a man of wealth and fame. He had been to Darien, and had captured Spanish vessels partially loaded with gold and silver. On the isthmus he had captured a mule train loaded with precious metals being transported from Peru, the land conquered by Pizzaro. It was this booty that gave him wealth, and the wealth gave him fame. While on the isthmus he had climbed a tree and beheld Balboa's South Sea, "on whose bosom sparkled the diamonds of the sun." In that tree top he prayed God to give him life and heart to sail an English ship on that sea.

The combination of wealth, fame and strong desire culminated in a plan to sail a fleet of vessels on that new ocean. Spain and England were ostensibly at peace, but such rovers as Drake never hesitated to plunder Spanish vessels or settlements. Queen Elizabeth did not wish to bring on war by openly commissioning Drake, but she sent for him and presented him with a sword, which in those days meant a God-speed and a command to be bold and brave for his queen.

On November 15, 1577, he set sail with a fleet of five vessels. Before rounding Cape Horn all but his own little vessel — the Golden Hind — had deserted or were lost. In this one little vessel he sailed along the shores of South America plundering every Spanish settlement until his boat was loaded down with gold and silver. Fearing to return by the same coasts he had plundered, he sailed toward the north, hoping to find a passage through the land that would allow him to sail out into the Atlantic and on to his home in England.

His journals show the claim that in June, 1578, he had reached the latitude of 48 degrees, which would bring him to the northern shores of the present State of Washington. His chaplain, Fletcher, tells wonderful stories of the rigors of that northern clime. He says they were driven southward by ice, snow, blinding winds and stinking fogs. Persons familiar with the June weather on Puget Sound would naturally conclude that the

year 1578 must have been an exceedingly unusual one, but the whole thing is explained when you learn that Drake in referring to this chaplain, used these words: "Ye falsest knave that liveth."

Sailing southward he entered, on June 5th, "Bad bay" (Chetko bay, 42 deg. 1 min.), and not being satisfied he journeyed on to Drake's bay (38 deg.), where he arrived on June 17th. Here he remained a month, repairing his vessel, laying in what stores he could get, and making friends with the natives. He erected a pillar ornamented with the coat of arms of Queen Elizabeth, and with his own name thereon. He took possession of the land for his queen and called it "Nova Albion," the Latin for "New England." The natives were friendly. He left the coast on July 25, 1578, and sailed toward the west, arriving at Plymouth on Sunday, September 26, 1579, thus being the second man and the first Englishman to circumnavigate the globe. Soon after his return Queen Elizabeth dined with him on his little vessel. As she was leaving she took up the sword she had given him, and laying the blade on his shoulder as he kneeled before her, she said: "Arise, Sir Francis Drake." The newly made knight served his queen well during the next few years in helping to destroy the Spanish armada. The record of his great voyage was published by Hakluyt under the title: "The Famous Voyage," and it was republished in 1854 by the Hakluyt Society under the title: "The World Encompassed." The little Golden Hind was saved as a relic for over a hundred years. Then Charles II had a chair made of some of the timbers and presented it to Oxford University, where it may still be seen.

In 1587 Thomas Cavendish, another English captain, sailed along the coasts of California. His presence on the coast is made more interesting to us in the northwest because of the reference to him in the famous note by Michael Lok in the work called "Samuel Purchas, His Pilgrims," published in 1624. In this note by Lok appears the story of Juan de Fuca's discovery of an extensive strait to the north of California. De Fuca claimed to have been robbed by Cavendish. The story was believed for two hundred and fifty years, and only in recent times have historians inclined toward the belief that the whole thing was a myth.

James Cook on his last voyage in 1778 visited our shores

He had the ship Resolution, and with him was Captain Clerke in the Discovery. One of his younger officers was George Vancouver, who was destined to again visit these shores in the same ship Discovery. Captain Cook left several names along our coasts, including Cape Gregory (43 deg. 20 min.), Cape Perpetua (44 deg. 19 min.), Cape Foulweather (44 deg. 45 min.) On March 22, 1778, he discovered and named Cape Flattery (48 deg. 15 min.), after which he was driven off the coast by a storm and approached it again near Nootka sound. Then he wrote in his journal: "It is this very latitude where we now are that geographers have placed the pretended Strait of Juan de Fuca. But we saw nothing like it; nor is there the least probability that ever any such thing existed."

On April 26th he sailed northward and did much important work in Alaska. He confirmed many of the discoveries made by Bering and restored his names. He was very fair and honest about showing respect for the exploration work of others. Cook's inlet commemorates his work in the northern waters. He blazed the way for many English and American fur hunters who afterwards made successful voyages to Alaska. He returned to spend the winter among the beautiful islands he had discovered — Hawaii — and while attempting to recover a stolen boat he was killed by the natives on February 14, 1779.

Cook's great work for geography was honored by all men in his day. While the English, Americans, French and Spaniards were fighting different phases of the war for American independence, each nation ordered its captains to render Captain Cook every possible assistance if they should meet him in any sea of the globe.

Captain James Hanna was the pioneer English fur trader on our coasts. In April, 1785, he sailed from China in a sloop of sixty tons, arriving at Nootka in August. He obtained 560 sea otter skins, which he sold in China for $20,500. The next year he made a second, but less successful, voyage. He named Sea Otter harbor, St. Patrick's bay, Smith inlet and Fitzhugh sound.

In 1786 James Strange came to the coast with two vessels called the Captain Cook and the Experiment. He obtained 600 otter skins and named Queen Charlotte sound.

Nathaniel Portlock and George Dixon visited the coast in 1786 in the vessels King George and Queen Charlotte. The ex-

pedition was fitted out by a company called the King George's Sound Company. Although a trading voyage, the expedition excited much interest as an exploring enterprise. Many gentlemen placed their sons under Captain Portlock to be educated to a seafaring life. They left England in August, 1785. The first year on the northwest coast was a failure. They visited at the Sandwich islands, and in 1787 their voyage was a great success. They obtained 2,552 sea otter skins, which they sold in China for $54,857. They did a great amount of geographical work and each captain published a journal. Some of the places named by them are Dixon entrance, Portlock harbor, Portlock point.

Captain Barclay's name is sometimes spelled "Berkely." He sailed from the Belgian port of Ostend in the ship Imperial Eagle in November, 1786, and arrived at Nootka in June, 1787. He obtained 800 skins and then traveled south. At Nootka he found McKey, who had been left there the year before, and from him learned the Indian rumor that Nootka was really on an island. He did not investigate this matter. Barclay Sound commemorates one of his discoveries. He saw and noted the great straits whose existence Cook had denied. He sent a crew of five ashore, and all were murdered by the natives. He called the river there "Destruction river." The name has since been transferred to the island near by, which Quadra for similar cause had called "Isla de las Dolores" in 1775. Barclay left the coast in September. He was accompanied on this voyage by his wife, who was the first European lady to visit our shores.

In 1787 and 1788 Captains Duncan and Colnett appeared in the ships Princess Royal and Prince of Wales. On Barclay's advice they went to the Queen Charlotte islands to trade. Duncan wintered on the coast. He discovered and named the Princess Royal isles. The same captain appears prominently in the northwestern marine history down to 1839.

John Meares, a retired lieutenant of the British navy, made a voyage to Nootka in 1786, of which little is known. In 1787 a company of English merchants in India fitted out two ships—Felice Adventurer and Iphigenia Nubiana. In command of Meares and William Douglas, these vessels left Macao in January, 1788. To evade excessive port charges in China and to avoid the expense of licenses from the monopoly trade companies they took English and Portuguese colors, and thus sailed under con-

ditions universally condemned by seamen. Meares took with him Chinese artisans, with whose help he proceeded to build and launch the first vessel constructed on the northwest coast. She was launched at Nootka on September 20, 1788, and was called the North West America. He had erected breastworks around his temporary buildings, and on them planted a cannon. Later when the Spaniards seized his property this temporary fortification was made much of by England in the diplomatic battle which resulted in the Nootka treaty.

While the sloop was being built Meares sailed southward for trade. On June 29, 1788, he sighted a great inlet, and believing in the reputed discovery of Juan de Fuca, he gave that name to the straits. On July 4th he sighted the Mount Santa Rosalia of Perez and at once gave it the classic name, Olympus, which has endured to the present day. On July 5th he discovered and named Shoalwater bay, now called Willapa harbor. On July 6th he found what he expected would prove the Spaniards' Rio San Roque. He called the bay Deception and the cape Disappointment. These names have remained, but he missed the Columbia river and wrote in his journal: "We can now with safety assert that no such river as that of Saint Roc exists, as laid down in the Spanish chart."

He returned to Nootka on July 26th, and on August 27th his sailing mate, Captain Douglas, arrived from Alaska in the Iphigenia. Captain Gray, the Yankee, arrived on September 17th, in time to witness the launching of the new boat. Meares hurried away to China with a rich harvest of furs. Douglas finished the new sloop and took it with the Iphigenia for winter quarters among the Sandwich islands. Meares took, with his load of furs, a lot of spars, which was probably the first shipment of lumber or timber from our shores.

In the spring of 1789 Douglas returned to the coast with Robert Funter in command of the North West America. This is the year that Martinez seized these and other English vessels, bringing on the celebrated Nootka controversy as already outlined under the head of Spanish Voyages.

Captain Colnett, in the Argonaut, and Captain Hudson, in the Princess Royal, were two other vessels that were participants in those troubles. They belonged to a new company formed by Meares, and the plan was to build on the coast a trading post,

to be called Fort Pitt. This fort was to be settled by seventy Chinamen, for whom the captains were to get Kanaka wives at the Sandwich islands. This scheme failed, but good foundations were laid for England to secure what is now British Columbia.

After Cook's last voyage, George III of England planned to send an exploring expedition to American coasts, of which expedition Captain Henry Roberts was to have command. George Vancouver was to have second place in authority, and of this appointment Vancouver says: "I found myself very pleasantly situated in being thus connected with a fellow traveler for whose abilities I bore the greatest respect, and in whose friendship and good opinion I was proud to possess a place." Both men had been officers with Cook on his last voyage. Vancouver afterwards honored his friend by naming for him Point Roberts.

This was in 1789, and it is seen that Vancouver had a narrow escape of being second instead of first in this great voyage. But before the expedition started, news was received of the troubles at Nootka. Preparations for war were begun and the Pacific cruise of the Discovery was abandoned. The English fleet assembled for that impending war was the greatest in the world's history up to that time. Spain yielded before actual hostilities began, and the Nootka convention was signed on October 28, 1790.

The expedition to the northwest coast of America was then revived, and this time Vancouver was given command, as Captain Henry Roberts was then in command of a war vessel among the West Indies. The fleet, about to start, comprised the sloop Discovery, under Vancouver, and the tender, Chatham, under Lieutenant W. R. Broughton. The crew of the Discovery included 100 men, embracing the following officers: Captain George Vancouver, Lieutenants Zachariah Mudge, Peter Puget and Joseph Baker, Master Joseph Whidbey and Surgeon Archibald Menzies, who was also the naturalist of the expedition. The crew of the Chatham included forty-five men with the following officers: Lieutenants W. R. Broughton and James Hanson, and Master James Johnstone.

Vancouver received elaborate instructions and orders to represent England at Nootka, in carrying out the provisions of the recent treaty with Spain, to explore the coasts and also to carry

A STREET SCENE, SPOKANE, WASH

to his Sandwich island home Towereroo, who had been carried away by traders in 1789. He was commissioned on December 15, 1790, sailed down the Thames to Long Beach January 7, 1791, and finally set sail on April 1, 1791.

They sailed around the Cape of Good Hope, discovered and named Chatham island and a number of smaller islands. They wintered at the Sandwich islands and sailed for the northwest coast of America in March, 1792, sighting New Albion below Cape Mendocino on April 17, 1792.

On April 27th, Vancouver was at the mouth of the Columbia and makes this entry in his journal: "On reference to Mr. Meares's description of the coast and south of this promontory, I was at first induced to believe it to be Cape Shoalwater, but on ascertaining its latitude, I presumed it to be that which he calls Cape Disappointment; and the opening to the south of it, Deception bay. This cape was found to be in latitude 46 deg. 19 min. and longitude 263 deg. 60 min."

He named Point Grenville on what is now the coast of Washington, a. d arrived off the Straits. On April 29th he met Captain Robert Gray in the Columbia. He sent Mr. Menzies and Lieutenant Peter Puget to interview the Yankee, who gave them information about his discovery of the Columbia river. Even after that, on page 58 of his journal (second edition, 1801), Vancouver records this opinion: "I was thoroughly convinced, as were also most persons of observation on board, that we could not possibly have passed any safe navigable opening, harbor or place of security for shipping on this coast from Cape Mendocino to the promontory Classett; nor had we any reason to alter our opinions, notwithstanding that theoretical geographers have thought proper to assert in that place the existence of arms of the ocean and extensive rivers."

Vancouver was a perfectly honest explorer, for he allowed that passage to remain in his journal, though before he left the coast Gray's discovery of the Columbia was substantiated and Vancouver sent Broughton in the Chatham to investigate the river. Vancouver at once began the work of exploring this inland sea. On April 30, 1792, he named New Dungeness, and as his youngest lieutenant—Joseph Baker—was the first to behold a beautiful snow-white mountain to the northeast, he honored the young man by writing for all time upon the map Mount Baker.

On May 2d he named Port Discovery and Protection island. From here they explored in small boats, naming Port Townsend, "in honor of the noble Marquis of that name;" and Hood's Channel, "after the Right Honorable Lord Hood" (May 13, 1792).

On May 8th he described the snowy range with Mt. Baker at one end and "the round snowy mountain, now forming its southern extremity, and which after my friend, Rear Admiral Rainier, I distinguished by the name of Mount Rainier."

Arriving at another station, just opposite the present site of Seattle, he sent out the boats, resulting in discoveries that have given us such names as Puget Sound, Port Orchard, Blake's island and Restoration point.

On June 4, 1792, birthday of George III, he landed near the present site of the city of Everett, gave the men an extra allowance of grog, with which to drink the King's health, and then took formal possession of the whole region, calling it "New Georgia." He then named Possession sound, "its western arm after Vice Admiral Sir Alan Gardner, I distinguish by the name of Port Gardner, and its eastern one by that of Port Susan." He does not say so, but I am convinced that this last name was that of his sweetheart, the one whom he would have married if he had not died so soon after returning to England.

On June 10th he named after Master Joseph Whidbey, the large island that still bears his name, and at the same time he named Deception passage. He named many other points in this region. From June 22d to July 12th he was in company with the Spanish captain, Galliano.

On August 28th he anchored at Nootka and began negotiations with Spain's representative, our old friend Quadra, who now bears the ponderous name, Don Juan Francisco de la Bodega y Quadra. While busy with these negotiations, Galliano came in with the information that Nootka was not on the mainland, but on an island. Quadra had already expressed to Vancouver the desire that their meeting could be commemorated by some important geographical name. So the English captain promptly called the new island Quadra and Vancouver island. That partnership name stood for about half a century, when the Spaniard's name was dropped.

Though the two commissioners formed high opinions of each

other, they could not agree, and concluded to report to their home governments for further instructions. Quadra died in March, 1794, over which Vancouver expressed great sorrow. Quadra was succeeded by General Jose Manuel d'Alava, who eventually carried out the provisions of the supplemented treaty of January 11, 1794, with Lieutenant Thomas Pierce representing England. These two met at Nootka, and on March 23, 1795, adjusted the quarrel that had been started by Estavano Martinez in 1789.

Before Vancouver left the coast and while waiting to hear from England, he wintered at the Sandwich islands and then explored the coast of Alaska. The charts he made were used by mariners for almost a century, or until they were supplanted by the more elaborate charts of the United States Coast and Geodetic Survey. At the head of that survey on this coast for forty years was George Davidson, now a professor in the University of California. Professor Davidson in one of his letters on these subjects took occasion to say to me: "Taken all in all Vancouver was a great man."

American Voyages.

We were also fortunate in having Yankee captains who took part in the exploration of our northwestern coasts. The record of their experiences forms an interesting narrative, but the most important result was the discovery of the Columbia river in 1792 by Captain Robert Gray on his second visit to this coast.

The first American vessels to visit the shores of the Northwest were the Columbia, 120 tons, Captain John Kendrick, and the Lady Washington, 90 tons, Captain Robert Gray. They were outfitted and owned by the Boston Company, consisting of J. Barrell, S. Brown, C. Bullfinch, J. Darby, C. Hatch and J. M. Pintard. The voyage was primarily for trade, and so iron and copper instruments formed a large portion of the cargo. But they might also have occasion to deal with Indians as owners of the land, so a large number of medals were provided, which in historic negotiations of later years became famous as the Columbia medals. Hubert Howe Bancroft, in his History of the Pacific States, volume XXVII, page 186, gives a picture of this medal.

The vessels sailed from Boston on October 1, 1787. About

the middle of March, 1788, the vessels were separated in a gale, but a month later Gray rounded Cape Horn and hastily made his way northward. On August 14th he crossed a bar and entered a harbor, probably Tillamook. The Indians were friendly at first and they enjoyed successful trade, but later the savages attacked them, killing Marcos Lopez, the captain's servant, who was a native of Cape Verde islands. From this fatal mishap the place was called Murderer's harbor.

Captain Gray's mate, Robert Haswell, kept a diary, which has proved of great value in preserving a history of these events. They noted the Straits of Juan de Fuca, called Barclay sound, "Company bay," and Clayoquot sound, "Hancock harbor." Hindered by gales and fog, it was September 16, 1788, before they reached Nootka sound, where they were towed to anchorage by boats from the ships of the English captains, Meares and Douglas. On September 20th they fired a salute in honor of the launching of the North West America, the first vessel built on the northwestern coasts.

Two or three days after this interesting occasion, Captain Kendrick arrived at Nootka with the Columbia, having had a stormy voyage from Cape Horn.

On October 1, 1788, the anniversary of the Yankees' sailing from Boston was celebrated. The English captains fired a salute and then Captains Douglas, Funter, Gray and Kendrick all dined together on the Columbia. On October 26th the English captains sailed away for winter quarters at the Sandwich islands, while the Americans decided to winter at Nootka.

Early in the spring Gray began work of exploration in Clayoquot sound and northward to about the site of Sitka. He named Queen Charlotte island "Washington island," and it was here that he drove a hard bargain with some Indians. He traded an old iron chisel for 200 sea otter skins, worth about $8,000. He returned to Nootka on June 14th. All the furs were transferred to the larger Columbia, and Gray was put in command to proceed homeward. He landed at Canton early in December, sold the furs, took on a cargo of tea and arrived in Boston in August, 1790. The voyage was not a financial success, but Captain Gray enjoys the distinction of being the first man to carry the new Stars and Stripes around the globe.

Not much is known of the doings of Captain Kendrick.

Meares gives him the credit of having first sailed around what is now Vancouver island. He collected many furs and sailed for China, where he remained until 1791.

In 1789 Captain Metcalf came to this coast in the Eleonora from New York. In China he bought the Fair American and put her in command of his son. Little is known of this expedition except that it met with disaster at the Sandwich islands.

Captain Gray in the Columbia, with Haswell as mate, sailed from Boston on September 28, 1790, and arrived at Clayoquot on June 5, 1791. He explored many inlets of the coast as high as 56 degrees north latitude. He named Portland canal "Massacre cove," on account of the murder of Second Mate Caswell and two sailors by the natives. He met the Hancock, Captain Crowell, from Boston, at the north end of Queen Charlotte island on August 17, 1791; and he also met the Hope, Captain Ingraham, from Boston, on August 22, 1791. He returned to Clayoquot on August 29th, and tried to go south for winter quarters. He met storms and again returned to Clayoquot on September 18th. On October 3d he laid the keel of a small schooner, built a house and fortified it.

Captain Kendrick in the Lady Washington was off the coast in June, 1791, and on July 12th he entered Nootka. The Spaniards seemed friendly, but he was suspicious and sailed north. He obtained 800 skins and returned to Clayoquot, where he got many more furs, repaired his ship and sailed for China on September 29th. He had bought several tracts of land at Nootka from the natives.

Captain Gray had gone into winter quarters, and while building his new sloop had a narrow escape from death. The natives had formed a plot to have the Hawaiian boy, who was a servant of the captain, wet the primings, after which they were to rush in at a given signal and kill all except the boy. All were then to share in the plunder. The boy told the captain, who promptly fired into the woods to let the Indians know that he was ready to prevent their diabolical scheme.

On February 23, 1792, the sloop was finished and the second vessel built on the northwest coast of America was launched under the name Adventurer. She was put in command of Captain Robert Haswell. Both vessels started out for a harvest of furs. They parted at Clayoquot, the Columbia going south.

On April 29th Captain Gray met Vancouver and reported his discoveries, including the river at 46 degrees and 10 minutes of north latitude, which he had been prevented from entering on account of the strong current. We have already seen how the English captain denied the existence of this river.

On May 7th he discovered and named Bullfinch harbor, which was changed later in the same year to Gray's harbor.

On May 11th he passed over the bar of Entrada de Heceta, which Meares had called Deception bay, and finding it really was a river he called it after his vessel, the Columbia. He anchored ten miles in, and on May 14th he sailed up the river fifteen miles further. He obtained many furs, but on returning to the mouth he was prevented from crossing the bar until May 20th on account of bad weather.

He sailed northwest, met the sloop Adventurer, and both anchored at Naspatee, just north of Nootka, on June 18th. Gray had obtained 700 sea otter skins and 15,000 other furs. Haswell had not been so successful, obtaining only 238 skins. On May 7th Haswell met the Margaret, Captain McGee, from Boston.

Gray and Haswell started together for the north, but the Columbia struck a rock and put back for repairs. Haswell went on as far as the modern Sitka, and the two finally reached Nootka together on September 13th. Nine days later they sailed for Neah bay, where they sold the Adventurer to Bodega y Quadra for seventy-five fine sea otter skins. In the Columbia they sailed for home on October 3d, touched at the Sandwich islands, and reached Macao on December 7, 1792.

These Yankee captains were prominently mentioned in the negotiations that grew out of the Nootka troubles. They testified as strongly as they could in favor of the Spaniards as against the English in that quarrel.

Nearly all the American vessels that appeared on this coast in those early days were from Boston. The finest ship of them all bore the name of Boston. She was owned by the Amorys of that city. Her captain was John Salter, and her mates B. Delonisa and William Ingraham. Her crew numbered twenty-four men. She obtained a cargo of goods for the Indian trade in England and sailed from there in September, 1802, arriving at Woody Point on March 12, 1803. The ship was moored to the

trees at Woody Point, as Chief Maquinna's tribe was in camp on the site of the old Spanish post in Nootka harbor.

The Indians were friendly and brought fresh salmon, which was very welcome. Chief Maquinna came in state to visit the captain. He was clad in his famous sea otter robe. This Indian was described as a remarkable savage. He was of fine figure, six feet tall and had a strong face. Captain Salter presented him with a double-barreled fowling piece. The next day he returned the gun and pointing to the broken lock he exclaimed, "Pashak," meaning "bad." The captain angrily cursed him for his stupidity and threw the gun to Armorer Jewett for repairs.

Maquinna smothered his rage and immediately planned a horrible revenge. He asked the captain when he was going to leave, and the answer was "to-morrow." The chief then suggested that he send some men to Friendly cove for fresh salmon. The idea was acted upon, and while the white men went for salmon, the red men swarmed around the ship. At a signal from Maquinna the crew was massacred. He himself grappled the captain, throwing him overboard, where he was quickly killed by the Indians in the canoes. They cut the heads off their victims, arranging them in a row on the quarter deck.

The skill of John R. Jewett, the armorer, was known to the chief, so when he was found in the hold still alive his life was spared. He was given his choice of becoming a slave to the chief or of having his head put in the row on the deck. Later Sailmaker Thompson was found stowed away below. Jewett saved his life also.

These two white men had remarkable experiences as slaves until they were rescued by Captain Hill in the Lydia from Boston in July, 1805.

In 1807 there appeared in England a book entitled, "A Narrative of the Adventures and Sufferings of John R. Jewett." Two American editions were published in New York, 1816, and Ithaca, 1849. If any reader gets a chance to buy one of those old books, seize it. You will never regret having it in your library.

From the tragic fate of this ship and the subsequent search for the crew, and from the further fact that most of the ships flying the Stars and Stripes were from Boston, the Indians got the habit of calling all Americans "Boston men." At that same time the Englishmen were always talking of the ships and sub-

jects of King George, giving rise to the title of "King George men." These two terms persist among the northwest Indians to the present day.

French Voyages.

Though the French did not claim sovereignty at any point on our northwestern coasts, there are two voyages which deserve notice here. The first was by Francois G. de la Perouse, who, in 1786, visited these shores at the head of an expedition making a cruise around the world for scientific purposes. He commanded the Boussole and was accompanied by Captain M. de Langle in the Astrolabe. He explored the coasts from Alaska southward to Monterey, where he arrived on September 14, 1786. His map was considered the best up to that time. It is reproduced in Hubert Howe Bancroft's History of the Pacific States, volume XXVII, page 176.

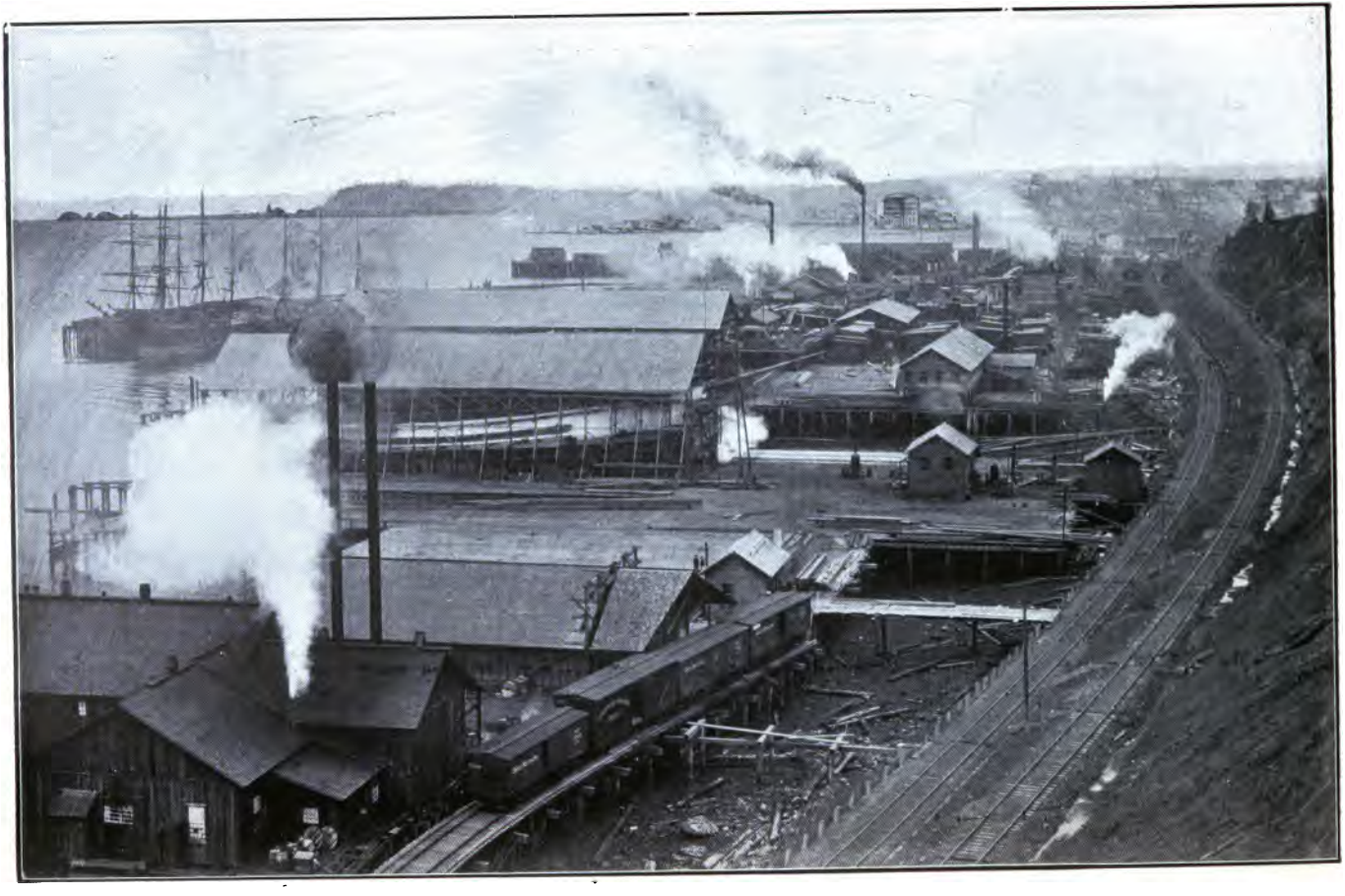
The next French voyage was in 1791, when Etienne Marchand sighted our shores on August 7th, in the Solide. He had sailed from Marseilles on December 14, 1790. After exploring the northwest coast of Queen Charlotte island he sailed for China on September 8, 1791, and arrived at Macao in November. He had obtained but few furs and did but little geographical work, yet his voyage was given undue prominence and was made famous as the basis of a magnificent treatise on South Sea Geography by Count Fleurieu, which was read before the National Institute of Sciences and Arts, at Paris in 1798.

EXPLORATION BY LAND.

Having traced the early history of the explorations by sea, let us consider briefly those other explorers who first approached our present home by way of the land.

In 1778 there was published in London a book by Jonathan Carver, entitled "Travels Through the Interior Parts of North America." His travels had been made in 1766 and 1767. In his book he was first to call attention to a great river flowing westward from the "Stoney" or "Shining" mountains, and he called it the "River Oregon." He embellished the story with rumors of cities of gold and silver. His name of the river was in 1812 immortalized in Bryant's Thanatopsis:

> "Where rolls the Oregon, and hears no sound
> Save his own dashings—yet the dead are there."



A VIEW OF EVERETT HARBOR AND CITY.

The first one to cross those "Stoney" mountains was not in search of gold, nor was he an American. Alexander Mackenzie was a Canadian fur hunter. His first attempt to reach the Pacific took him northward to the Arctic, and though disappointed, he had added to the sum of human knowledge by discovering the river that bears his name. He next paddled up the strong current of Peace river, and after many dangers and exciting experiences he reached the sought for Pacific ocean at the mouth of the Bellacoola river, just north of Vancouver island. Going up Cascade canal he painted on a large rock: "Alexander Mackenzie, from Canada, by land, the twenty-second of July, one thousand seven hundred and ninety three."

Lewis and Clark Expedition.

This most important and justly famous expedition had its real origin in the fertile brain of Thomas Jefferson. While United States minister to France he received a visit from the celebrated Yankee traveler, John Ledyard, and subsequently made great effort to send him across Siberia, across the Pacific and then across the continent of America. All this failed and Jefferson next took the matter before the American Philosophical Society. It was agreed to send out a small party, to consist of Captain Meriwether Lewis and a French botanist named Andre Michaux. It was Jefferson's idea that two men could travel safely through the lands of the savages, while a larger party might invite jealousy and consequent death. But this expedition of 1792 failed.

When Jefferson was elected President he still clung to his idea of exploring the northwest. He made young Lewis his private secretary to learn whether he really was the proper one to head a party for such work. On January 18, 1803, he sent a confidential message to Congress asking for permission and money to fit out an exploring expedition. Both were granted. Then began most active preparations. Lewis was given command, but asked and obtained permission to share it with his friend, Captain William Clark. The purchase of Louisiana in the same year gave great impetus to the movement. Every detail in the preparations seems to have received attention from Jefferson. Then followed the momentous years of 1804 to 1806, when this American expedition succeeded in crossing the plains,

climbing the great backbone of the continent and descending the Columbia river to its mouth, where the winter was spent in their own Fort Clatsop. They made many discoveries in geography, in zoology, in botany, in ethnology and in geology. They were gone so long that friends gave them up for dead. Their own journal speaks of the arrival back to civilization as follows: "September 23d, descended to the Mississippi and round to St. Louis, where we arrived at 12 o'clock; and having fired a salute, went on shore and received the heartiest and most hospitable welcome from the whole village."

Founding of Astoria.

John Jacob Astor had become a great millionaire in the fur trade. He desired to enter the field of the Pacific northwest, and eventually to control a chain of trading posts across the continent. He organized the Pacific Fur Company and treated his partners with rare confidence and generosity. One party was sent by sea in the Tonquin and another by land under Willis G. Hunt. Both parties suffered, and Mr. Astor was practically swindled out of his property by his designing Canadian partners. But a fort had been built at the mouth of the Columbia in 1811. It received the name of Astoria and over it floated the Stars and Stripes. It is the oldest American city on the Pacific coast. At the close of the war of 1812 Astoria was restored to the Americans.

Bonneville, Wyeth and Wilkes.

Captain B. L. E. Bonneville, of the United States army, obtained a leave of absence and spent the years from 1832 to 1836 in exploring this northwestern corner. He was ordered by the government to do a wonderful lot of things at his own expense. He did much fur hunting and exploring. His men mingled with the Indians, marrying some, murdering others and making friends with as many as possible.

Nathaniel J. Wyeth appears in our history from 1832 to 1837. Full justice has never been done this pioneer merchant-explorer. He is called a man of visions, but he braved the opposition of the Hudson Bay Company and was the first to call attention to the feasibility of salmon fisheries in the Columbia river. Max Muller in his Recollections gives a delightful letter from James Russell Lowell, under date of January 18, 1880, in which refer-

ence is made to Wyeth as follows: "I remember very well the starting of an expedition from my native town of Cambridge in 1831, for Oregon, under the lead of a captain of great energy and resource. They started in wagons ingeniously contrived so as to be taken to pieces, the body forming a boat for crossing rivers. They carried everything they could think of with them, and got safely to the other side of the continent—as hard a job, I fancy, as our Aryan ancestors had to do."

The American expedition around the world, under Commander Charles Wilkes, United States Navy, in the years 1838 to 1842, visited Puget sound and the Columbia river in 1841. Considerable work of geographical importance was done. The exploration on Puget sound began at the bay where now stands the city of Tacoma. To commemorate the fact they named the place Commencement bay. The bay where Seattle is located was also named by this party—Elliott bay.

The Hudson Bay Company.

When the Astor parties started for the Pacific northwest in 1810 the Northwest Fur Company, later amalgamated with the older Hudson Bay Company, also rushed for the same field. Their representatives arrived at the mouth of the Columbia only a few days after Astoria had been established. They then recoiled to the interior and began the construction of forts and trading posts. They later bought Astoria from Astor's conniving partners, and when missionaries and settlers began to come they found the country pretty much monopolized by this company. It would require several volumes to tell how this great company controlled for so many years the savages and white men who occupied this region. There is one name, however, that should always be recalled with pleasure whenever speaking of this company. Dr. John McLaughlin, chief factor and sometimes called the King of Vancouver, was a conscientious servant of his monopolistic company, but he was also a warm hearted, humane man. Many of the pioneer settlers never tire of telling about his numerous kindnesses to all who suffered. It was Dr. McLaughlin who, in 1825, changed his headquarters from Astoria to Fort Vancouver, thus establishing the oldest city in what is now the State of Washington.

MISSIONARIES AND PIONEERS.

After the work of discovery, exploration and trapping, there invariably appear upon the frontiers of America the missionary and the pioneer. It was so in the old Oregon country. The first to appear were the Methodists, who settled in the Willamette valley in 1834 under Rev. Jason Lee. They soon sent out others who formed branch missions, and thus spread their efforts at good work.

Then followed, in 1836, the famous Whitman party, sent out by the American Board of Commissioners for Foreign Missions. This party consisted of Dr. Marcus Whitman and wife and W. H. Gray, who were located near the present site of the city of Walla Walla, and Rev. H. H. Spalding, who was located at Lapwai. Later the same board sent out Rev. Cushing Eells and Rev. Elkanah Walker, and others. All these men and women labored incessantly to elevate the Indian. They were often discouraged, and in November of 1847 the country was shocked over the horrible massacre of the Whitmans and those they were sheltering. There has recently reappeared the old controversy over the question of Whitman's services to his country. The extremists of one side claim that he saved Oregon to America, while those on the other side claim he did nothing whatever to save old Oregon. It is altogether likely that between these two extremes lies the real truth. There is no question of Whitman's great service to the Indians and his martyr-like death. There is no question but that he made his famous winter's ride. The whole controversy rests on the purpose of that ride. It seems perfectly clear to me that there was a political as well as a religious purpose for the ride, and that Whitman at least gave great aid to the causes that saved Oregon to America.

Whitman's famous wagon that rolled into the great valley of the Columbia was speedily followed by others. Notable among the earliest parties was that headed by T. J. Farnham, which, on May 1, 1838, paraded the streets of Peoria, Illinois, carrying at their head a banner inscribed, "Oregon or the Grave." They proposed to build great cities. The party dwindled by desertion in crossing the plains, only four wintering at Bear river. Farnham and his three companions went on down the Columbia, and returning to "the States" by way of Honolulu and Mexico,

Farnham published in 1844 his "History of Oregon Territory," one of the noted early books.

James Bridger, the "Blanket Chief," is reputed the discoverer of Great Salt Lake. He was in the far west from about 1830 to 1846. He located Fort Bridger on the Black Branch of Green river.

In 1840 Joel P. Walker arrived with his wife and five children. They were not explorers, fur hunters or missionaries. They were just settlers, seeking homes, and it may be said that they were—

"The first low wash of waves where soon
Shall roll a human sea."

In 1841 twenty-three families, including sixty persons, arrived from the Red River settlement under the auspices of the Hudson Bay Company. They were intended as settlers for the Puget Sound Agricultural Company, a branch of the Hudson Bay Company, and were believed to constitute the British effort to solve the problem presented by the Joint Occupancy treaty of 1818 and 1827.

The year before, or in 1840, a party of Rocky mountain men had arrived, including such characters as Joseph L. Meek and Robert Newell.

In January, 1842, Dr. Elijah White was made sub-Indian agent at a salary of $750 a year. He was the first United States official located in this northwest.

The party of 1842 included Colonel A. L. Lovejoy, who turned back on his trail from Walla Walla to accompany Dr. Whitman on his famous winter's ride. This year's party included 112 persons. Columbia Lancaster had started west with the party, but turned back on account of the death of his child on the plains. He came later, and became the first delegate to Congress from Washington Territory.

From this time on settlers swarmed in, year by year, with only slight interruption during the years 1848 and 1849, on account of the Whitman massacre and the diversion caused by the discovery of gold in California.

GOVERNMENT IN OLD OREGON.

Here is a subject most difficult to condense into a sketch like the present. The theme is most interesting, and of course the subject lies close to the foundation of our recorded history. At

that time Washington was a portion of the Oregon country, and participated in the earliest governments.

The Provisional Government.

Soon after American subjects began to live in Oregon they manifested desires for a government independent of the rule exercised by the Hudson Bay Company. Having the desire, they began agitation. They petitioned Congress, held meetings, organized debating societies and a circulating library. There were jealousies and intrigues fanned by the Hudson Bay Company and by the different denominations of missionaries. There then came the celebrated "wolf" meetings to organize against the danger of wild beasts to their domestic animals, and out of these came the meeting at Champoeg on May 2, 1843, which has just been commemorated by the erection of a monument. The provisional government of Oregon was begun, and wholesome laws were adopted that sufficed to regulate the wide expanse of wild lands and few peoples until Congress should with painful slowness reach the conclusion that Oregon was worthy Federal recognition.

Territorial Government.

On August 14, 1848, Congress passed the organic act of Oregon Territory. The first governorship was offered to, but declined by, Abraham Lincoln. It was then accepted by General "Joe" Lane, a hero of the Mexican war. Many laws were enacted during this period which affected the present State of Washington. Oregon remained a territory until 1858, or five years after Washington had become a separate territory.

SETTLEMENT OF BOUNDARIES.

It would be well to trace now the several stages by which the present boundaries of the State have been fixed. It was originally supposed by Jefferson and others that the Louisiana purchase of April 30, 1803, included the Oregon country. Spain objected to that treaty of purchase from Napoleon and this gave rise to the idea that Spain might still hold a cloud over the title to at least the Oregon section. So we see in the treaty with Spain on February 22, 1819, known as the Florida purchase, a regular quit-claim deed covering Oregon, from Spain to the United States. This you will find in Article III of the treaty.

The "Joint Occupancy" treaty is found in the treaty with Great Britain under date of October 20, 1818, in which it was agreed that Oregon should be open to settlement by subjects of both powers for ten years. In 1827 this provision was made indefinite as to time.

In 1824 a treaty was signed with Russia, on April 17th, by which it was agreed that fifty-four degrees and forty minutes should be the boundary between the claims of the two powers. This treaty, as already stated, is closely related in history to the great Monroe doctrine, and it also gave rise in later years to the cry of "Fifty-four Forty or Fight!"

On June 15, 1846, the treaty with Great Britain was concluded. By this treaty our northern boundary, the forty-ninth parallel, was continued from the Rocky mountains westward to the channel dividing Vancouver island from the mainland.

Then came the cutting up of old Oregon. Washington Territory was created March 2, 1853; Idaho, March 3, 1863; Montana, May 26, 1864, and Wyoming, July 25, 1868.

The boundaries were fixed then as they have remained since, though in 1885 President Cleveland "pocket vetoed" an act of Congress to change the lines by annexing the panhandle of Idaho to Washington. There was also another avoidance of change. Great Britain claimed the group of islands which now comprise San Juan county, of the State of Washington. It at one time seemed as though war would result from this dispute, but it was finally submitted to Emperor William I of Germany as arbitrator, and on October 21, 1872, he decided in favor of the United States.

WASHINGTON TERRITORY ORGANIZED.

While this state was a part of Oregon the citizens were compelled to go to the Willamette valley capital to transact government business. This became irksome, and an agitation was begun to secure a new territory north of the Columbia river and to bear the name Columbia. Meetings were held, orations delivered on the Fourth of July, and in September, 1852, a paper was established at Olympia to favor the project. It was called the Columbian. General Lane had been promoted from Governor to Delegate to Congress for Oregon, and he favored the move for a new territory. A bill was introduced, but just before its passage by the House of Representatives, Mr. Stanton, of

Kentucky, had the name changed from Columbia to Washington, in honor of the Father of His Country. The bill was passed on March 2, 1853, and was signed by President Fillmore on the same day. Two days later President Pierce was inaugurated, and before the end of March he had selected the new officers for the territory.

The first governor, Isaac Ingalls Stevens, is, from many reasons, one of the most interesting characters in our whole history. In addition to his duties as governor, he was given charge of the survey for a railroad route from the Mississippi river to the Pacific, and he was also made Superintendent of Indian Affairs for Washington. All these duties he performed in a remarkably able manner, and finally yielded up his life as a hero, fighting for his country at the battle of Chantilly.

The railroad surveys took much of the Governor's time, but he arrived at Olympia, and on November 28, 1853, issued his proclamation calling for the election of the first legislature, to be held on January 30, 1854, and the legislature to meet at Olympia on February 27, 1854.

A glance over the names of the men who comprised that first legislature is inspiring to the student of our state history. They were a noble band of pioneers. They did their work in the full spirit of high-mindedness. The first bill enacted was one calling in the three justices of the territorial Supreme Court to aid in the draft of a code of laws. That first body of laws has met with admiration from that day to this.

TERRITORIAL LIFE.

For thirty-six years, or from 1853 to 1889, Washington remained a territory. During that time many pioneer settlements had been formed, some of which grew into important cities. The first governor made ten treaties with the Indian tribes, but the ink had hardly dried on those documents of peace before an Indian war broke out in various parts of the territory. This was suppressed, and no similar trouble has ever afflicted the people of this section. Lumber, coal and fish soon gave the people a profitable commerce, and progress became more rapid as each year rolled on.

Woman suffrage was tried and abandoned in territorial days.

THE BELLINGHAM BAY CITIES — WHATCOM AND FAIRHAVEN.

Chinese labor became a menace, and the year 1886 saw anti-Chinese riots and consequent martial law in several communities.

In 1889, the very year in which statehood was obtained, the cities of Seattle, Spokane, Vancouver and Ellensburg suffered from terrible fires, which form epochs in the history of each of those communities.

The political life of the territory was greatly disturbed and excited just before statehood through an agitation for the forfeiture of the unearned land grants of the Northern Pacific Railroad.

The region north of the Columbia river was organized by the provisional government of Oregon into two districts, or counties, named Clark and Lewis. After Oregon Territory was organized by the Federal government those two counties were subdivided until, at the creation of Washington Territory in 1853, there were eight counties. During the territorial period of Washington's history twenty-six more counties were organized, and since statehood but two others have been added, making thirty-six in all.

The newness of the country, the great work of exploiting the natural resources in the forests, the seas and the mountains, make the citizens of the present day feel like the pioneers of a great state of the not distant future. And still they are not pioneers. That honored title should be reserved for those who crossed the plains and mountains in those chariots of civilization —the creaking wagons, loaded with the entire possessions of the hardy frontiersmen. They were the path-finders. They were the home-builders.

Real dangers of the wild frontier
Will blanch with fear the bravest cheek,
But when a stranger drawing near
Seeks the tale of the pioneer,
His head he boweth low and meek.

He will not boast of deeds well done,
Of sacrifice or Indian stealth.
They who tread the paths he has come,
Must trace about his rough-hewn home:
"The birthplace of a commonwealth."

STATEHOOD.

There has been a span of but a dozen years of statehood for Washington. As we look back over that period we feel that those years are full of history. But after all, that history will be more and more condensed as the years roll by. The facts

seem of greatest importance at this short range. There are the establishment and broadening out of the many state and federal institutions, the building of railroads and factories, the rise of cities, the dwindling away of the Indians, the multiplication of newspapers, schools, churches and libraries, the increase of farms, mines, logging camps and fish canneries, the hotly contested political battles—all these have passed into the record. There will always be a deep interest in the formative period of that first dozen years.

PHYSICAL GEOGRAPHY AND GEOLOGY OF THE STATE.

THE TOPOGRAPHY OF WASHINGTON.

The topography, or physical features, of Washington is characterized by the greatest diversity. From the low plains which border over three thousand miles or so of coast line it is possible, within a few hours, for one to ascend to heights of over ten thousand feet—to the tops of snow-covered mountains. The influence of such great differences in the topography of the state is far-reaching; it not only produces scenery that is ever changing, but it gives rise to a great variety of climate, rainfall, soils, vegetation, and occupations of the people.

From the standpoint of its physical features the State of Washington may be divided roughly into six regions. Passing from the Pacific ocean eastward these divisions are: The Olympic mountains, Puget Sound basin, Cascade mountains, Okanogan highlands, Columbia plain, and Blue mountains. It must be understood once for all that these areas merge insensibly one into another, and that the line of separation or demarcation is almost, if not wholly, arbitrary. It must be understood also that these larger divisions are very general, and that in time, when the geography of the state is better known, further subdivisions will be necessary. It is recognized, too, that in their larger aspects these areas are not limited to the confines of Washington, but extend far beyond the boundaries of the State, as in the case of the Cascade and Olympic mountains and Columbia plain.

Olympic Mountains.

The Olympic mountains of Washington represent merely a segment of the general coastal range of mountains. They have been cut in two at the Straits of Fuca, and by the Chehalis and the Columbia rivers. On the west and north they are bordered by a narrow coastal plain, and on the east they descend to the basin of the sound. The Olympics came into existence at the

end of Miocene time, and are the result primarily of great foldings of the strata with attendant elevation. In the northern portion, the elevation of the Olympics was accompanied by great igneous activity. Volcanoes were produced, from which came flows of lava sufficient in extent to cover the larger part of the sedimentary rocks and to bring the summit of the mountains to a height of more than eight thousand feet. The lava flows extended down to the sea on the westward, and occasionally reached well into the Puget Sound basin on the eastward.

The southern portion of the Olympics, as far as known, exhibits but little indication of igneous activity attendant upon, or following elevation. The rocks are entirely of sedimentary origin, with the exception of occasional small dikes, and chiefly because of the absence of lava flows the Olympics do not here have more than one-third the height of the northern portion of the range.

The Olympics, standing boldly as they do in the path of the very moist westerly winds, have their higher parts eternally snow-capped and their lower elevations drenched by excessive falls of rain. Because of the heavy rainfall and the precipitous courses of the streams erosion has been, and is, most active. The rivers are large and numerous, and have dissected the higher mountains into profound canyons with sharp serrated divides. Because of their wonderful broken character the Olympics are well-nigh inaccessible, and it is not surprising that their rocky fastnesses represent the least known portions of the United States.

Puget Sound Basin.

Lying in a general north and south course between the Olympic and Cascade mountains, and merging insensibly into these, is to be found a great trough known as the Puget Sound basin. The basin for the most part is a region of folded rocks, where erosion has planed off the tops of the folds practically to a common level, and where glaciers have left their deposits in the form of level plains. The glacial sediments are oftentimes in the form of plains of till, with local deposits of sand and gravels, as about Seattle, but sometimes in the form of broad, almost barren, plains of coarse gravels, such as occur to the southward of Tacoma and Olympia. At one time in the history of the basin it stood somewhat higher above the sea than at the present time, and the streams eroded wide valleys of moderate depth. Then,

in the northern part of the basin at least, there came a sinking of the land with a consequent advance of the sea, whereby the rivers in their lower courses became drowned and Puget Sound came into existence. At the same time some of the higher hills became isolated when the intervening lowlands were covered by the water of the sea, and the San Juan and other islands were formed. The southern portion of the basin, in Washington, has a more hilly or broken aspect than the northern part, largely because of the fact that it lies beyond the southern limit of glaciation, and hence does not possess the level plains of till and gravel.

Cascade Mountains.

The most prominent feature of the State is this range of mountains, so called from the waterfalls, or cascades, which abound among them. The general height of the mountains is about eight thousand feet above the sea, but beyond this elevation the hoary heads of five old volcanoes rise much farther. From one of these vantage points, such as Mt. Rainier or Glacier peak, a hundred peaks may be seen within the broad range, many of them capped, in part at least, with never-melting snows.

Beyond a doubt, the Cascade mountains in their history have had alternating periods of elevation and long-continued erosion, so that in more than one instance they have been worn down to a plain approaching the level of the sea, such a plain being designated by geographers as a pene plain. Such appears to have been the case preceding the last elevation of the Cascades. At that time the mountains were worn down to a pene plain, following which came an elevation of several thousand feet, whereby the low plain was changed into a great plateau. Out of this plateau, by the very active work of the streams, the present mountains have been carved, much as a sculptor would carve a piece of statuary out of a massive block of marble. Within the Cascades, especially in the northern part, remnants of the old uplifted pene plain may yet be seen, but the erosive forces have done their work so well that only vestiges remain. From all this it is seen that the sublime ruggedness of the Cascades is due not so much to inequality of uplift as to the slow-going, unceasingly active work of air and water. It is worthy of note before passing that the pene plain character of the Cascades is largely lost immediately about the volcanoes, where great outpourings

of lava occurred. Especially is this true of that part of the Cascades from Mt. Rainier southward, where the amount of lava erupted was excessive.

Of the rivers which crossed the former Cascade pene plain before its uplift, only the Columbia was strong enough to hold its position while elevation was in progress. Some of the other streams to the northward persisted long enough to cut deep gaps in the rising mountain range, which are now known as passes. These passes vary from three thousand to five thousand feet in height, and have been much sought after as routes for railways, wagon roads and trails.

In the work of erosion the streams have been ably assisted by glaciers, for virtually all the larger valleys of the Cascades show that they have been to a certain degree carved out by great rivers of ice, as glaciers are sometimes called. Usually at the head of each large valley of the Cascades, one finds a great semi-circular basin or amphitheatre, or cirque, as it is called in the Alps, which often contains a small glacier, but which has been hollowed out of the mountain by the vigorous work of a large glacier. These cirques or amphitheatres frequently contain small lakes and parks, and afford some of the most beautiful scenery of the mountains.

Okanogan Highlands.

Extending from the Cascade mountains eastward to Idaho, and lying to the northward of the Columbia and Spokane rivers, are the Okanogan highlands. Geologically they are doubtless a part of the Cascades, but in this classification are separated from these mountains because of their wide difference in topography. The highlands exhibit the pene plain character of the Cascades, but their last elevation was much more moderate. They are now characterized by a beautiful rolling surface, with long, gentle slopes leading down from the watersheds to the wide stream basins. The divides, although attaining heights of five thousand feet and more, are yet for the most part gently rounding and are not sharp or abrupt. Some of the valleys were at one time filled with glaciers, and these have left characteristic moraines and terraces along the valley sides. The highlands, for the most part, possess a dry climate, and hence are covered with bunchgrass and sage brush rather than with forests, and in addition contain many alkali lakes.

Columbia Plain.

Practically all that part of Washington south of the Okanogan highlands and east of the Cascade mountains is embraced in the Columbia plain. From the Columbia river, at a height of five or six hundred feet above the sea, the plain rises very slowly to the westward and eastward, reaching an elevation of two thousand feet at the Idaho line. Properly speaking, therefore, much of the plain should be regarded as a plateau.

The surface of the plain, when looked down upon from some commanding height, seems to be remarkably level, but a closer inspection reveals sufficient irregularities here and there to give the plain a diversified appearance. Between the Cascade mountains and the Columbia river are several sharp east and west ridges of a semi-mountainous character, produced by some abrupt folds in the sheets of lava. These ridges have risen athwart the stream courses, and some rivers, such as the Yakima, have cut deep gaps across them. To the eastward of the Columbia, in the Great Bend country, the plain is considerably cut up by old river courses — now virtually abandoned — and known as coulees. The coulees are often five hundred or six hundred feet in depth, with precipitous walls, and represent the courses of large streams which have now sought other channels, or which have withered away because of a decrease in the amount of rainfall. The Snake river and its tributaries have cut deep canyons in the plain, giving it thereabouts a very broken, hilly appearance. From the Snake river northward toward Spokane, in what is known as the Palouse country, the plain or plateau is covered with hills of moderate altitude, possessing the usual characteristics of sand dunes. They are hills of æolian origin, or, in other words, represent deposits of fine soil carried to their present position by the prevailing winds of the southwest. In outline they have long, gentle, southwesterly slopes, with northeasterly abrupt ones. They were formed at a time of greater dryness than the present, when the surface of the country was at all times quite bare. They were also formed so long ago that the storms have done considerable erosion in the meantime, and have their drainage lines now well established.

Blue Mountains.

These mountains, situated on the border line between Washington and Oregon, represent merely a local uplift of prominence

in the plain described above. A broad, domeshaped mass of lava was elevated at this point, rising some seven thousand feet above the sea, and about five thousand feet above the surrounding plain. While the streams have cut deep canyons in the mountains, they still retain as a whole their even-topped appearance. The mountains are high enough to have sufficient precipitation to support a moderate forest growth, and in this way afford a contrast to the surrounding prairies.

AN OUTLINE OF THE STATE'S GEOLOGY.

The time of appearance of the first land within the confines of what is now the State of Washington is not known with accuracy. It was undoubtedly at a very early date, and probably within that time which is designated the Archaean. In geological antiquity when the earth was young and covered with a well nigh universal ocean, the earliest portions of the present American continent made their appearance in the forms of islands. The largest of these islands were about Hudson's bay and southward. Further westward in the Ozark region, about Lake Superior, along the later axes of the Rocky mountains, and probably in the northern portion of what is now the Cascade range of mountains, other small islands appeared. From the most western of these islands, by successive additions in later ages, the State of Washington has been gradually evolved. In the northern part of the Cascades, where they have not been covered with younger rocks, these old time rocks may yet be seen. While they may be regarded provisionally as belonging to Archaean time, their exact age is yet to be determined. In character these ancient rocks are, for the most part, granites, gneisses, schists, slates, marbles, and other rocks of a highly metamorphic character. They are very rarely met with south of Mt. Rainier, but when followed northward they are found to form an ever-widening band, until along the northern boundary of the state they extend virtually from near Mt. Baker to the Idaho line. It is very probable that after the first appearance of these rocks above the sea they suffered a submergence and became deeply covered with sedimentary deposits. After a second elevation these sediments were in a large measure removed by erosion, but here and there are still to be found remnants of the later rocks. These are of recognized Cretaceous and Tertiary ages and consist of sand-

A WASHINGTON CEDAR STUMP

stone, conglomerates, limestones, and other varieties of stratified rocks. In many parts of the Cascade mountains, throughout past time, volcanic forces have been especially active. Not only have there been great injections into the sedimentary rocks, but in several instances immense quantities of igneous rock have risen to the earth's surface through great throats or tubes in the crust, and volcanoes have been formed. While there are many volcanic vents in the Cascades, five volcanoes are especially prominent: Baker, Rainier and St. Helens, standing to the westward of the axis of the range; Adams, rising upon the eastern slope, while Glacier peak alone is located in the very heart of the mountains. These volcanoes came into existence about the middle of the Tertiary or Miocene time, and were in their most active stages when the range as a whole was undergoing its last great elevation.

Cretaceous Age.

As mentioned above, rocks of Cretaceous age have been identified at several points in the Cascades, and it may be presumed that the rocks of this age were of considerable extent but have been removed by excessive erosion. The San Juan islands comprise one large area of rocks of this age. The northernmost portions of these islands show massive beds of sandstone carrying cretaceous fossils in abundance, and closely connected with rocks of the same age which occur nearby on Vancouver island. The principal part of the San Juan islands, however, and in fact all the higher portions, is made up of rocks of igneous origin. The latter rocks have come up through the sedimentary beds and have covered them to a very large extent. It is interesting to note that the limestone which occurs here and there on the islands originally belonged to some large sedimentary beds lying below the sandstone, and not appearing at the surface, except where masses of it, large and small, have been disrupted and brought to the surface by the igneous rock. In some instances, as at Roche Harbor, the igneous rock in its movement upward tore off and brought to the surface a mass of limestone of extraordinary size, but in most instances the fragments of limestone are of but little economic importance.

Eocene Tertiary Age.

In the next age succeeding the Cretaceous, that of the Eocene Tertiary, considerable additions were made in Washington to

the land of that time. The sea coast then extended from the region of the present sound northward and southward. Along the coast were extensive swamps, and the streams coming from out the Cascades emptied into the sea through great estuaries. About these estuaries existed a luxuriant growth of vegetation, and here grew the forests from which were made the great fields of coal with which our state is so well supplied. These fields of coal, several in number, extending from the neighborhood of Whatcom to the vicinity of Castle Rock, were all formed independently of each other, and were never connected, although they have many striking resemblances. The coastal region of that period alternately rose and fell through a long lapse of time. When it rose, the vegetation flourished in the swamps and about the estuaries, and when it fell the accumulated vegetable matter was covered by sediments of sand and clay, and ultimately converted into coal. The repeated oscillation of level, along with the growth and burial of vegetable matter, produced in this way in the course of time a great series of seams of coal. In some of our coal fields over one hundred distinct veins of coal have been discovered. The great majority of these are thin, and will never be of any great value economically. There are seams of coal eight or ten feet in thickness, however, which are of course easily worked, and are of great value. When originally formed, the coal beds were all practically horizontal, but some time after they were made they were subjected to mountain-building forces and were thrown into great folds. So it happens that we find our coal beds dipping at angles varying from a few degrees to entirely perpendicular. The Roslyn coal field, lying upon the eastern slope of the Cascades, belongs to the same period as the western field, but had a somewhat different history, in that the coal plants grew upon the shores of a great lake of that region, instead of along the shore of the sea.

Miocene Period.

The completion of the western parts of the State from the old sea coast mentioned above to the present Pacific border took place in what is known as Middle Tertiary, or the Miocene period. It is possible that in the Olympic mountains, however, there may be metamorphic and sedimentary rocks of a much earlier age, possibly as old as any represented in the Cascades.

It is also possible that the great volcanic activity of the Olympics may have been synchronous with that of the Cascades, but these matters can be determined only when the Olympic mountains are more fully explored. Lying at the base of the Olympics, and extending throughout the southeastern part of the State, sandstones, conglomerates, shales, and other common sedimentary rocks occur, and from their abundant fossils they are easily recognized as of Miocene Tertiary age. Rarely do these rocks occur in their original horizontal position, as they, too, have been folded and crumpled, and considerably eroded.

Columbia Lava Plain.

There now remains but one section of the State to be described geologically, and that is the large area known as the Columbia lava plain. About the Miocene Tertiary period, as far as we know, this great region was a comparatively low plain, with occasional high hills, especially upon the eastern borders, near the present Idaho line. It is to be presumed that the rocks comprising this plain were composed largely of the same material as those of the Cascades, lying to the northward and westward. Within the floor of this old plain great fissures were formed at different places, and through these masses of molten rock came from the depths below and flowed out in great sheets. This molten rock, upon cooling, was of a black color and of a variety known as basalt. The rock was in such a highly molten condition that from each fissure the lava flowed very many miles before cooling and coming to a standstill. After the first great outpouring there came a time of quiescence, the lava cooled upon the surface, and a soil was formed which supported a considerable vegetation. In time, however, there came other flows, the vegetation was largely destroyed, the only remnants remaining being layers of petrified wood and charcoal, now found interbedded with the layers of lava. In this fashion, with alternating periods of activity and times of quiet, the great lava plains of the Columbia were formed. The depth of the lava varies from two thousand to four thousand feet. In a few cases the higher hills of the ancient plains, such as Steptoe, Butte, and others, were never covered by the basaltic sea, and now appear virtually as islands. Of such great depth is the lava that only the larger, deeper streams, such as the Snake, have eroded through the lava

and uncovered the older rocks which lie below. It may be assumed that the surface of the lava at the conclusion of the last flow was approximately level, and that it extended in a monotonous plain from the foothills of the Cascades to the mountains of Idaho, but here, as elsewhere in the state, mountain-making forces have been actively at work, with the result that the comparatively level lava plain is now crossed by many high ridges, and even mountains. In the western part of the plain may be noticed the Badger mountains of the Great Bend country, the Rattle Snake hills and several east-west ridges which lie to the westward of the Columbia, and greater than all, the Blue mountains, a great dome-shaped mass of lava rising fully seven thousand feet above the sea. These mountains are comparatively even-topped, but at the same time they are much dissected by streams, and abound in deep canyons.

In this brief outline of the State's geological history, mention can not be made of many of the episodes, such, for instance, as the oscillations of the coast, whereby the lands adjoining have been alternately flooded and laid bare; or the large lakes which were formed upon parts of the Columbia lava, and which existed long enough for their floors to be covered with sediment of great thickness.

One event of the State's later history, however, must be mentioned, and that is the formation of great glaciers upon the mountains of the State, and their movements southward as far as the line of the geological map designated as the southern limit of glaciation. Glaciation in Washington was no doubt closely connected in time and cause with the general glaciation of the northern part of North America. It occurred in the first part of the present age, known as the Quaternary. Attempts have frequently been made to estimate the time which has elapsed since the glacial period, the estimates varying from ten thousand to one hundred thousand years. In glacial time, upon the summits of the Cascades, the Olympics, and the coastal mountains of British Columbia, glaciers of enormous size were formed. In the region about Puget Sound these giants met, and here we find the glacial sediments, consisting of boulders, gravel, sand and clay, of a thickness unknown elsewhere. So great in quantity is the material which the glaciers transported from the neighboring mountains, that only at points widely apart does the

bedrock about Puget Sound appear at all. The glacial sediments not only constitute the floor and shore cliffs of the Sound, but over large areas about the Sound they form the local gravel plains known as "prairies."

MINERAL RESOURCES OF WASHINGTON.

Although the knowledge of our mineral resources has come to us slowly, yet we feel certain that in them lies a giant of tremendous possibilities, which will one day make Washington one of the most prosperous states of the Union. In an article of the brevity of this, it is possible to speak only of the best known of our natural resources, and of those only in a very general way. Localities can receive but scant mention, and the writer can hardly touch upon, or even hint, concerning the progress of development or of the work of transforming the crude minerals into useful products.

In the distribution of gold and silver we find that these minerals are practically limited to the older rocks of the State. It is therefore very improbable that prospecting in the rocks of a later age will ever bring satisfactory returns to the prospector. The veins of gold and silver among these older rocks occur most commonly in the granite or the diorite, but they are also found in the gneisses, slates, and in other metamorphic rocks as well. As a rule the sulphide ores predominate, and so the gold and silver occur with galena, iron pyrite, chalco-pyrite, zinc blend, arseno-pyrite, and other similar minerals. Free milling ore is the exception, although there are a few districts, such as Slate Creek and Swauk, where such ore is of great promise. The discovery lately of tellurides of gold in the Mount Baker and other districts has given rise to the hope that we may have developments of a Cripple Creek order in some of our mines.

One marked characteristic of the gold and silver deposits in this State lies in the great extent of the ore bodies and in the almost inexhaustible quantities of the ore. It is true that the ore is usually of a low grade, although ores of the very highest value are occasionally found. Altogether the precious metal deposits are of such a nature that while their development must necessarily be slow, yet there is no question but that the quality and quantity of the ore justify and will lead to the erection of large mining plants which will yield to their owners a good revenue for years to come.

The world-wide interest which has lately developed in copper has naturally made that metal sought after in Washington. Within a brief space of time several districts of Washington — at Index, along the Carbon river, and elsewhere — have come into prominence because of their copper minerals. In its geological occurrence the copper minerals have a distribution similar to that of the gold and silver. The copper occurs in veins and is found in the granite more commonly than in the other rocks. The copper minerals are for the most part sulphides, like those of Butte, Montana. In a few instances native copper is found, as are also the oxides and carbonates. In the most prominent copper localities of Washington the bodies of ore, while of low grade, are unusually large and give every indication of being of very great value.

Many other minerals, such as lead, arsenic, zinc, molybdenum, etc., are also found, either alone or in connection with the precious metals. These in time will come to have a value of their own. In some instances they will be mined independently of any other mineral; in others they will be saved as by-products during the process of extracting the principal metals from the ores.

Up to the present time the mineral veins most worked have been those carrying coal. For many years coal has been mined in Washington, and the recent stimulus in all industrial matters has led to a greatly increased output from the coal mines of the State. Our coal fields are several in number, and unlike those of Pennsylvania, seem never to have been connected, but were of distinct origin. Each seems to have been formed independently of the others, although in the character of coal and in age they closely correspond. The coal fields are characterized in general by a large number of veins, and in many instances these veins are of unusual thickness. The coal basins are covered to great depth by glacial materials and very heavy forests, which fact accounts for the lack of knowledge concerning their extent. It is believed, however, that careful study will show the coal fields to be greater in extent than is generally supposed. Without doubt there lies stored within them a vast wealth.

As the State increases in population the demand for building stones of different varieties will correspondingly increase, and the quarrying of our stone become one of the great industries of

our State. Ever since the cities of Washington began their growth, our local stone has found a good market. Of our different building stones, sandstone has so far been used to the greatest extent. The sandstone of the coal measures of the Cascades, as well as that to be found on the islands of the San Juan archipelago, is of an excellent quality. It is easily quarried, and seems to be inexhaustible in quantity.

At very many points in the Cascades, in fact almost everywhere that the oldest rocks occur, granite of the finest character is found in great quantities. At several places, notably near Spokane and at Index, quarries have been in successful operation for years, and large quantities of granite have been taken out for building purposes. Before passing from the building stones, a word must be said concerning the high grade marble to be found in our State. This is also found among the oldest rocks of the State. While this marble occurs in many places, yet for lack of transportation facilities it has been quarried at only one place in the State, and that at Valley Station, north of Spokane. Here an ornamental serpentine of the finest quality is also obtained.

The occurrence of limestone is not uncommon in the Cascades, and it is found also in the Cretaceous rocks of the San Juan islands. At several places in the State the burning of lime has become an industry, but nowhere to the same extent as at Roche Harbor, on San Juan island. The burning of lime at this place was begun several years ago, and has gradually reached very great proportions. The limestone is of a considerable extent and of a quality rarely equalled. The product of these kilns supplies not only the major portion of Washington, British Columbia and Oregon, but is carried in great quantities to California and Hawaii.

In the materials which were transported to their present position by the glaciers before mentioned are found great quantities of clay and sand. The clay is oftentimes very pure, and is of such a quality that from it a number of different products may be made. Not only is it capable of being made into brick, but it is of value for the making of cement, terra cotta, pottery, etc.

This brief statement of our mineral resources would not be complete without some slight mention of the soils of the State which are as truly mineral products as any that have been

mentioned. Soils are usually divided into two general classes, the first being the "in situ" soils, or those formed in the place where they are found; the second are the "removed soils," or those which have been shifted from their original place of making. Of the "in situ" soils the best examples in Washington are those of the great lava plains in the southeastern part of the State. These soils are of a great depth, and because of their finely powdered character and proper chemical composition are of great fertility. Among the removed soils we have those of that section of the State once covered by glaciers as well as the soil of the broad river valleys such as are common about the Sound. The glacial soils are of course a mixture of all soils traversed by the glacier in its course. If they do not contain too large a percentage of coarse gravel and sand they are quite productive. The alluvial soils, the river bottoms, are of very fine grain, and as all know are of great fertility. The United States Department of Agriculture has characterized the soils of the Skagit valley as being the most fertile in the United States.

From this brief outline of the material resources of our State it must be patent to everyone that in them there is to be found a vast latent wealth, which in time will bring to us a great material prosperity.

PACIFIC AMERICAN FISHERIES COMPANY'S PLANT AND OCEAN DOCK, FAIRHAVEN, WASH.

CULTIVATING THE OYSTER IN PUGET SOUND WATERS.

PUGET SOUND,

THE COMMERCIAL CENTER OF THE PACIFIC COAST.

The magnificent body of water known as Puget Sound, was discovered by the Spanish, American and British explorers and traders in the latter quarter of the eighteenth century. Its name was given by Capt. George Vancouver of the British navy, in 1792, in honor of one of his lieutenants, Peter Puget, then with Vancouver on his famous expedition of that time. Lieutenant Puget left the ship off Elliott bay, now Seattle's port, and by sail boat explored the waters to the south as far as the present city of Olympia. From Point Defiance to their southern ends these waters were called Puget Sound. From Point Defiance north to Port Townsend the main channel was called Admiralty inlet. Other branches were called Hood's canal, Possession sound, Canal de Haro, Rosario strait, Fuca strait and Gulf of Georgia, with many lesser places called ports, passages, bays and inlets. This large number of names for what was really one body of water became confusing to the people. The first settlements were made upon the head waters of Puget Sound proper. The country about soon obtained the same name, and as the pioneers spread further and further they carried it with them to the international boundary line. Subsequently by acts of the legislature and of congress the name Puget Sound was made to apply to all the American waters from the Pacific ocean at Cape Flattery to their further eastern and southern limits. These include two thousand square miles of surface. This is so broken with indentations and filled with islands that its shore line has the extraordinary length of sixteen hundred miles. It may also be said to be but the beginning, or the southern end of a beautiful sea, extending from Olympia, in the State of Washington, through the foreign province of British Columbia, to Skagway in Alaska, one thousand miles in length. For the whole distance the waters are practically the same — blue and deep, free from shoals and hidden dangers, protected from high

winds by the surrounding lands, an attraction to navigators and tourists unequalled elsewhere on the surface of the earth.

Limiting the Sound, however, to the waters in our own state, and to the lands draining into them, Puget Sound may be described as the portion of the State between the Cascade mountains on the east and the Olympic mountains and the Pacific ocean on the west — the combined land and water having an area of about ten thousand square miles. It is one of the favored places of the world. No other like area has more diversity, greater resources, advantages and attractions. The waters are not only fine to look at and sail upon, but they are full of fish, and they furnish innumerable harbors of the best possible character. The lands surrounding them are of all descriptions, valley and upland, hill and plain — the levels ranging from that of the sea itself to the tops of mountains from six to fifteen thousand feet in height. From these mountains rivers descend having lengths of from twenty to one hundred miles. There are also innumerable lakes, the largest being Lake Washington, with a length of twenty miles and a width of from one to four miles, and an extreme depth of six hundred feet. Other lakes range downward in length from ten miles. Along these rivers and around these lakes are valleys of marked fertility. In these valleys the farmer raises oats, hops, vegetables, fruits, hay, cattle, horses, poultry, and all the ordinary products of the temperate zone, to perfection. Wheat has been known to yield sixty bushels to the acre, oats double that wonderful quantity, hops three thousand pounds, potatoes five and six hundred bushels, cabbages of forty pounds weight, turnips quite as heavy, peaches, plums, prunes, cherries, pears, apples, and berries of all varieties. For the dairyman there cannot be anything better. The country is unsurpassed for milk, butter and cheese.

With a mild climate, ranging from twenty to ninety degrees Fahrenheit and precipitation of from twenty to sixty inches per annum, a virgin soil, home market, and all the conditions favorable, Puget Sound is and must be all that the farmer can reasonably desire. In the years to come, when its lands are more availed of by agriculturists, the fame of the farm products of Puget Sound will extend to all the continents, and they will be found in the markets of the leading ports everywhere.

Originally the land was covered with timber, chiefly fir and

cedar, with considerable quantities of hemlock, spruce, oak, maple and cottonwood. By the attacks of man, in his efforts to supply the demand for lumber, and in his desire to clear the land for the purpose of cultivating it, one half of this timber has been removed. There is yet standing over fifty billion feet, or enough to supply the wants at the present rates of consumption for a half century at least. From the earliest times the trade in lumber has been the chief commercial interest of Puget Sound. The original market, San Francisco, has been outgrown; the spars, squared timbers, sawn boards and shingles now going to Asia, Africa, Europe, Australia, South America, the islands of the deep and all parts of the United States. No day of the year elapses without the going off of ships and trains loaded with the forest products of this region.

There is also much development in the way of minerals. Particularly is this the case with coal. The coal market is not so good as that for timber, and in consequence the development of the industry has been slower. But during the past few years it has been going ahead by leaps and bounds — increasing 100 per cent. since 1895, and 1000 per cent. since 1880. The Puget Sound coal mines are chiefly in King and Pierce counties; Whatcom, Skagit and Thurston having promising mines but yet of small output. The Puget Sound mines yielded a million and a half tons of coal in 1900, and will probably yield two million tons in 1901.

Gold, silver, copper and lead are found in many parts. Owing to the inaccessibility of the mines and the costs connected with their operation, only a few have thus far passed the development stage and but little has been accomplished in the numerous enterprises in this direction. These obstacles will in time be overcome, when the precious metals of Washington will be a yearly source of wealth, rated at millions of dollars, and its other minerals will be no less in importance and account than its gold and silver. Sandstone, granite and valuable clays abound, as also lime, etc.

Fish include salmon, halibut, herring, cod, smelt, oysters, clams and crabs. They are prepared for our Atlantic and foreign patrons by canning, bottling, barreling, drying, smoking and freezing. The industry or trade has grown rapidly of late, employing thousands of men and yielding a product worth

millions of dollars. As a means of livelihood for the people it ranks with coal and is subordinated alone by farming and lumbering.

Ship building is another growing trade. Vessels of wood, iron and steel are built; vessels propelled by sail, steam and other means, and vessels of all dimensions from the tiny yacht to the immense battleship. Considering the advantages of Puget Sound in this direction, and the possibilities of great American war and merchant marines, there is reason to suppose that in ten years the shipbuilding interest here will rival that of the Delaware, and in twenty years that of the Clyde even.

In the manufacturing of many articles progress is making of a marked character. Sites can be obtained for little money. Water and fuel are abundant. Electric power is cheap. Labor, both skilled and unskilled, is to be had at fair prices. The raw material is here or can be brought here by ship and car. The climate is favorable, permitting operations unceasingly from January 1st to December 31st every year. The market is here for vast quantities of all the ordinary wares of the world. The shop on the grounds has a great advantage in transportation, having no haul, or at least a small haul, to reach its customers, as against the long haul of its eastern competitor. The country is also on the right lines, the lines where elsewhere are to be found, the great manufacturing establishments. The start has been made in lumber, ships, flour, and food stuffs — and there will be no stop hereafter. Old England or New England will be no more noted for their manufactures than will be, one of these days, Puget Sound.

Commercial Puget Sound is on the high road of the civilized world. The attention of great engineers and capitalists has been drawn to it. They read the future with unerring accuracy. They have long been preparing for the great things that are coming this way. Within two hundred miles north and south five great transcontinental railroads terminate their systems — the Great Northern, Canadian Pacific, Northern Pacific, Union Pacific, and Southern Pacific Railroads. So much cannot be said of any other part of the Pacific coast. Allied with these railroads are other great transportation concerns that bring them business, and that go far toward magnifying the great terminal center of the coast. Nothing attracts more than a rail-

road; nothing does more to populate a district; nothing so certainly insures its prosperity and continued growth. One railroad is followed by another; this one by a third, and so on, until a great center is established for the transportation of the business of the world. So it is and will be on Puget Sound. Fifteen years ago there was but one railroad from the eastern states; ten years ago but two; five years ago three; soon there will be a fourth, and not long after the fifth and sixth. These railroads draw to them lines of ships. Ten years ago the first steamships were put into the trade of Puget Sound with foreign countries — the Northern Pacific to Japan and China. Five years ago the Nippon Yusen Kaisha added its vessels to the same trade. Within the past twelve months four other companies have come upon the field — the China Mutual, the Glen, the Kosmos, and the Globe. Still another, the Great Northern, is in sight. These companies are using ships of the largest size, and of as good character as ships anywhere. They are speedy and comfortable, and their capacity for freight is equel in some cases to that of any ships afloat — ten to twenty thousand tons. They not only trade to and from Siberia, Japan and China, but to India, South America and Germany by the Straits of Magellan, and Great Britain by the Mediterranean Sea. Other steamships ply somewhat irregularly to Australia and South Africa, and still others to our own ports in the Hawaiian and Philippine groups of islands. Supplementing these are fleets of sailing vessels with wheat, flour and general merchandise for the leading ports of the world.

Puget Sound has only one rival on the Pacific coast. That is San Francisco. The community there is older. Trade was there firmly established before it was begun here. Owing to the impetus obtained during the days of gold, business relations were so fixed as to be beyond change by any ordinary power. Only the extraordinary could affect them. The extraordinary is to be found on Puget Sound. There is now and will be hereafter two great commercial centers on the Pacific coast — San Francisco and Puget Sound, and of these it is believed that the greater will be Puget Sound. The tonnage engaged in the foreign trade here is equal to the tonnage engaged in the same trade there; that engaged in the coastwise trade there is the greater of the two. The value of the trade there is yet in excess

of that here; the value of the trade here exceeds that of all other Pacific coast ports combined except San Francisco.

The reasons for the wonderful growth of commerce on Puget Sound are apparent. First, there is the inviting harbor, unequalled; next there are the local resources and trade, which require for their purposes a thousand ships of a thousand tons each; then there is the vast quantity of merchandise carried both ways by the transcontinental railroads, and last, there is the shorter and cheaper route by Puget Sound between the great body of the people of the United States and the hundreds of millions of people of Asia and elsewhere.

This latter matter is worthy of a moment's consideration. By rail it is a less distance from all the northern states to Puget Sound than it is to San Francisco. The advantage in some cases runs up into the hundreds of miles and is a factor of moment. On top of this is the lesser distance from Puget Sound to Asia across the Pacific ocean. This in some cases is nearly a thousand miles. Between the two, the trip can be made in much shorter time, and for much less money, by way of Puget Sound than by way of San Francisco. This, too, is the case supposing that all other conditions are alike favorable to both ports. But as a matter of fact they are not, since there are advantages in favor of the northern route which the other does not possess. One of these is the greater economy of fuel. The mines are here, and the coal can be bought for less than half the cost that it can be secured there. Thousands of dollars can be saved on every trip of every ship in this way. Again, freight can be brought by rail for very much less money to Puget Sound from New York and Chicago than to San Francisco. The haul is not only a shorter and less mountainous one, but the cars can come and go loaded. There is comparatively little freight from San Francisco to the east. The cars reach San Francisco full and return empty. It is the other way here; the cars leave full of lumber and shingles, and generally have come back empty. This is because there has in the past been but little exchange between the car and the ship. There were not ships enough. Those that went were loaded to their utmost capacity. The Spanish, South African and China wars disorganized trade, the ships being taken by governments for transports that otherwise would have been carrying merchandise to and from Puget Sound. With normal or

peaceful conditions again, these ships are returning. The empty cars that formerly came for lumber are coming loaded with merchandise, in constantly greater numbers, and their contents are going more and more to form the cargoes of the ships. The railroad company that can fill its cars both ways can afford to carry for less money than the company that has full cars one way only. It is possible to fill the California cars but the one way; the Puget Sound cars will be filled both ways. Having this advantage, freight can be carried in them for 60 per cent. of the cost of similar service on the southern roads. The freight exchange of ship and car must be on the shores of Puget Sound. In saying this, nothing invidious or derogatory is intended. San Francisco is a great city, and will be greater. It has vast trade, and will have vaster. But it cannot have all; it cannot overcome the advantages of Puget Sound. Here will be a mart of commerce ere long fully equal to that, and in time second to none in the world. The New York of the Pacific, a decade hence, will be on Puget Sound. People will wonder then how it ever was otherwise, and we ourselves will wonder at the length of time it took to learn and demonstrate what at that time will be proven in a hundred ways and be as clear as the light of day.

THE CLIMATE OF WASHINGTON.

With the greatest diversity of physical features, Washington affords the greatest diversity of climate; yet without great extremes of heat and cold, and with absolute immunity from those destructive storms known as cyclones and tornadoes.

So great is the diversity in topography that there are several localities having distinctly different climates. When we consider the climates of Puget Sound and the Walla Walla country we find them to be widely different in many or nearly all of the meteorological elements. Also the Spokane country, the Big Bend country, the Yakima country, and the Klickitat country, all differ in some climatic features from the Walla Walla country, and, moreover, all differ from each other. The Puget Sound country has a different climate from the Coast district, and, at the same time, the Puget Sound region may be divided into districts which have widely diverse climatic characteristics. Therefore, it is very difficult to generalize about the climate of Washington without being inaccurate.

Only one broad generalization can be safely made: Nature's barrier, the Cascade mountain chain, separates the State into two divisions more widely different in climatic features than are any two adjacent states of the American Union. The one, on the west of the barrier, may be considered as having a moist climate, and, in many respects, a marine one; the other, east of the barrier, as having a dry climate, and essentially a continental one, though unquestionably modified by storms and air currents from the ocean. But these two divisions may properly be subdivided; the western section has two regions, one *moist*, and the other *wet*, or *very wet*, while the eastern section has also two regions, the *dry*, and the *very dry*, or *semi-arid*.

PRECIPITATION DISTRICTS.

The *wet* district lies between the ocean and the coast range, or Olympic mountains; the *moist* district between the coast range

ADMINISTRATION BUILDING, UNIVERSITY OF WASHINGTON, SEATTLE, WASH

and the Cascade mountains ; the *dry* district occupies the eastern and northern portions of the State ; while the *very dry*, or *semi-arid*, district occupies the great plain of the Columbia, or the central part of the State east of the Cascades. The *wet* district has a rainfall of 60 to 100 inches annually, 75 per cent. of which occurs during a wet season from November to April, inclusive ; the *moist* district has a rainfall of 25 to 60 inches, annually ; the *dry* district has an annual precipitation of 12 to 25 inches ; and the *semi arid* district has an annual precipitation of less than 12 inches.

A failure to discriminate in the above manner has caused Washington climate to be absurdly misconceived in the minds of many people, who, having read of the heavy rainfall at Neah Bay and Clearwater, have concluded that the whole State was favored with deluges of water ; or, on the other hand, having read of the irrigation projects of the Yakima country, have jumped at the conclusion that all of the State was arid or semi-arid. The truth is that the rainfall of the Puget Sound district is not greater than that of the Ohio valley, and that of the southeast counties is about equal to that of South Dakota or Minnesota.

In the *wet* district are included the counties of Wahkiakum, Pacific, Chehalis, Mason, and the western halves of Jefferson and Clallam. In the *moist* district are included the counties of Whatcom, Skagit, Snohomish, San Juan, Island, King, Kitsap, Pierce, Thurston, Lewis, Cowlitz, Skamania, and the eastern halves of Jefferson and Clallam. In the *dry* district are included the counties of Walla Walla, Columbia, Garfield, Asotin, Whitman, Spokane, Stevens, Ferry, Chelan, the greater part of Lincoln, the eastern half of Adams, the western half of Klickitat, the western third of Yakima, the western half of Kittitas, the northwest half of Okanogan, and a strip in the extreme western part of Douglas. In the *very dry* or *semi-arid* region, where crops cannot be successfully grown without irrigation, are included Franklin county, the eastern two-thirds of Yakima, the eastern halves of Kittitas and Klickitat, the western half of Adams, the southwest part of Lincoln, the southeast half of Okanogan, and nearly the whole of Douglas county.

There are two exceptions to the above classification which may be noticed. One is an area in the extreme northeast part

of Clallam county, around Port Townsend in Jefferson county, and around Coupeville in Island county, where the annual precipitation falls below the 25 inch limit, really eliminating that locality from the moist district. The other is the steep western slope of the Cascade mountains, where the annual precipitation, a large portion from melted snow, exceeds 60 inches. But as the latter district is almost uninhabited, and the former is relatively very small, the exceptions are unimportant ones.

CLIMATE AND CROPS.

Over the semi-arid region, as before stated, no crops can be successfully grown without the aid of irrigation. It is a region of great treeless plains, from 300 feet to 3000 feet in altitude, with a soil that appears barren, but is of surpassing fertility when supplied with sufficient water. Over the dry region, a rolling plateau 2000 to 3000 feet in altitude, with no trees except along the water courses, but having a soil with an unusual power of retaining moisture, wheat and the other small grains, potatoes, tree fruits, in short most of the crops grown in the upper Mississippi valley, are raised successfully. The wheat fields are phenomenal in their yield. Over the moist and wet districts, where were formerly almost unbroken forests of gigantic evergreens, except for a few small prairies, most of the crops of the temperate zone, except corn and cotton, can be raised in the cleared valleys. The abundant moisture is especially favorable for grass, clover, and oats. Green meadows the year around remarkably adapt the country for dairying.

PRECIPITATION SEASONS.

Over the whole section west of the Cascades mountain barrier the precipitation is mostly in the form of rain, and very little snow occurs except upon the mountain slopes. Though 70 or 75 per cent. of the rainfall occurs from November to April, yet only two months, July and August, can be fairly classed as dry months, and even those are seldom without a few showers.

Over the section east of the Cascades barrier perhaps one-half of the winter precipitation is in the form of snow. This usually forms a desirable protective covering for the winter wheat grown in the southeast counties. Showers occur at intervals throughout the summer, a fair proportion of which are light or moderate thunder storms. High winds seldom

accompany the showers, hail storms are very rare, and tornadoes are entirely unknown.

TEMPERATURE EAST OF THE CASCADES.

The home-seeker in Washington may choose his temperature, as he may also select a dry or moist climate. In the Walla Walla country there is found a climate with hot summers and mild winters, with very little snowfall, and only short periods of moderately cold weather; only very rarely is the weather severe. In the Palouse, Yakima, and Klickitat countries the summer weather is hot, and the winters have colder weather than the Walla Walla country, with quite a little snow. In the Spokane, Big Bend, and Okanogan countries, still farther north, but all on the east side of the Cascades, the summers are short and hot, and the winters have considerable cold weather, with some quite severe spells. Several times during a usual winter the thermometer descends below zero—in rare instances from 20° to 30° below zero, at the coldest stations. Spokane has a record of 20° below zero, and Usk, in Stevens county, a record of 33° below zero. In the hot spells of summer, temperatures of 90° to 100° are reached; in exceptionably hot spells at some stations maximum temperatures of 100° to 115° occur. Walla Walla has a record of 112°; Lind, in Adams county, a record of 115°. The locality about Lake Chelan and the valley of the Okanogan river has phenominally mild weather in winter; a satisfactory explanation for it has not been given, except for the mild weather about the lake, that is probably due to the heat given off by that body of water, which is so deep that it never freezes.

The mean annual temperature about Walla Walla, and the lower Yakima valley is 53° to 54°, ranging from 31° in January, to 76° in July. About Spokane it is 46° to 48°, ranging from 24° in January, to 68° in July. The coldest inhabited locality in the State is Stevens county, with a mean temperature of 44°, ranging from 20° in January, to 68° in July. Colville has a mean temperature of 45°. In the settled portion of Kittitas county the annual mean temperature is 44° to 46°. The winters are cold but not severe, except now and then an exceptional cold snap. The summers are short. In Klickitat county the annual mean temperature is 50° to 52°. Some very hot days occur in summer.

TEMPERATURE WEST OF THE CASCADES.

Here the climate is equable; that is, there are no extremes of heat and cold. The summers are cool and moderately warm, and the winters mild and rainy, with very little snow. On the hottest days of summer the temperature rarely exceeds 90°, and on the coldest days of winter very rarely gets as low as zero at the coldest stations. In this division is found an annual mean temperature ranging from 46° in the north to 52° in the south; and from 38° in January, to 64° in July. The warmest localities Pacific, Lewis, Clarke, and Cowlitz counties, and the whole of the upper Sound region, embracing Kitsap, Thurston, King, Pierce, southern Snohomish, and eastern Mason counties. The annual mean temperature is 50° to 52°. The lower Sound region and the Straits region are cooler; their annual mean temperature is 46° to 48° in the northern part, and 48° to 50° in the southern part. Along the Strait of Juan de Fuca and the Pacific coast, the temperature is cool and equable the year around, ranging from about 40° in winter to 58° or 59° in summer.

Seattle, the warmest place in the Puget Sound country, has an annual mean temperature of 51.4°, ranging from 40.6° in January, to 64.7° in August. The highest temperature recorded at Seattle was 93°; the lowest recorded was 3°. The average annual precipitation is 37.16 inches, varying from 29.28 to 45.16 inches. Tacoma, which has about the average Puget Sound climate, has an annual mean of 50°, ranging from 38.4° in January, to 64.2° in July and August. The average annual precipitation is 43.68 inches. Olympia, with about the same temperature, has a greater rainfall, viz., 52.65 inches, annually. Port Townsend, with an annual temperature of 48.8°, has a rainfall of only 22.42 inches, annually. The annual temperature of Whatcom is 49.3°, with an annual rainfall of 31.91 inches. The temperature of South Bend is 53.2°; its rainfall 89.27 inches. South Bend has the highest winter temperature of any place in the State, viz., January, 41.9°. The temperature and rainfall of Grays Harbor country are each a little less than those of South Bend.

COMPARISONS.

From the above description, the cool summer weather and suprisingly mild winters of the western section are at once apparent. But the winters of Eastern Washington are not rigor-

ous, as some of the low temperatures on record might indicate, but, on the contrary, those very low temperatures are exceptional. They occur only when the winds are north or northeast. The short summers of the eastern section contain quite a number of hot days during which the thermometer rises at some places to the 100° mark and above; but these temperatures are not so oppressive as they might appear to the inhabitants of the eastern half of the United States. The reason for this is that the air over the great plateau region, of which Eastern Washington forms a part, is so dry that evaporation takes place at a very rapid rate. This has a decided effect in lowering the temperature experienced by the human body, the "sensible temperature," as it is called, being several and sometimes many degrees lower than that indicated by the thermometer.

Western Washington, as a whole has about the same winter climate as Maryland, Virginia, North Carolina, Tennessee, and Arkansas, while its summer temperature is like that of Maine, New Hampshire, Vermont, Northern Michigan, and the Canadian provinces. Eastern Washington, as a whole, has a similar winter climate to New York, Michigan, Illinois, and Southern Iowa, while its summer climate is like that of New York, Michigan, Minnesota, and North Dakota, though drier in mid-summer.

CAUSE OF THE MILD WEATHER.

An explanation of the cause of the phenominally warm winters and cool summers of the Puget Sound basin and the coast of Washington may be in order, and one has not far to seek for it. Primarily, the cause is proximity to the Pacific ocean, and secondarily, it is the direction of the prevalent winds. The high specific heat of water, or that property by which it absorbs a great deal of heat in appreciably raising its temperature, and parts with a great amount of heat in appreciably lowering its temperature, causes the surface of the ocean to be warmer in the cold weather of winter than the land surface. In the summer, on the other hand, the water surface does not become as greatly heated as the land surface. The consequence is, that winds from the ocean are warm in winter and cool in summer.

WINDS.

The south to west winds, which are prevalent in winter, are warm winds; while north to east winds are cold winds. The

opposite is true in summer; the southwest to northwest winds, which are the prevailing winds of summer, are cool, while north to northeast winds are hot in the daytime though cool at night.

The temperature of winds is in a great measure determined by the temperature of the region off which they circulate. So our north to east winds in summer are hot because they blow from off the great northern plains, which at times in summer, become greatly heated by insolation. On the contrary, in winter they blow from those great plains which have lost their heat by radiation, and become intensely cold.

An erroneous statement has recently been made by some writers on Washington climate, viz., that the wind always blows from the cold toward the warm locality. The absurdity of this is apparent if we reflect that, according to such statement, we could have no warm winds but only cold ones, and that all the winds upon the earth would blow toward the equator. The true fact is, the air circulates, and its motion is the result of differing specific gravity in different localities. In its circulation it must sometimes move from warmer to colder regions, and sometimes from colder to warmer regions. One fact is always true, it obeys the law of gravity and moves toward the region where the air is lightest, *i. e.*, has the least downward pressure. The measure of truth in the absurd statement referred to is found in the land and sea breezes of limited areas on the immediate coast, and in the west winds of Washington in summer when the distribution of barometric pressure is very uniform. Then the warming up of the land of the great plains expands the air above it, and causes an indraught from the heavier air over the ocean on the west. But as a rule our westerly winds are due to areas of high barometric pressure off the coast, and our cold northeast winds of winter are due to remarkably high pressure areas to the northeast of us in the Canadian provinces. Often the Rocky mountain chain is a sufficiently high barrier to prevent the overflow from the cold waves of Alberta and Assinaboia, but occasionally it is not, and Eastern Washington is then visited by severe winter weather. Usually the high barrier of the Cascades chain prevents the cold waves from the northeast from reaching Western Washington, but occasionally, though rarely, the pressure is of sufficient intensity to break over the barrier in icy, northeast winds, causing the one or two, sometimes three, cold snaps of a

Puget Sound winter. The duration of these spells is usually but two or three days. The chilling northeast winds, mingling with the moist air of the Sound and coast regions, will thus sometimes produce snow.

It has been explained how and why the south to west winds of the western section are warm in winter and cool in summer, while the north to east winds are cold in winter and hot in summer. There remains one wind to be explained—the one to which the fanciful name "Chinook" has been given. Much speculation and controversy has been indulged in over the nature and origin of the so-called "Chinook" wind. The commonest acceptation of the term over the northwest states, however, is a warm, very balmy wind which arises suddenly after a cold spell, and is so dry that it evaporates the snow fields as if by magic, leaving no water standing on the ground.

The writer is of the opinion that the "Chinook" is, in its origin, a warm, moisture-laden southwest wind west of the Cascade mountains; that when it crosses the Cascades the bulk of its moisture is precipitated on the western slope by the cold of elevation, and that then it descends the eastern slope of the Cascades as a dry wind, which becomes warmed dynamically as it descends. It is much warmer than the air it displaces, which is usually air of radiation areas, or that brought by cold northerly winds. Similar "Chinook" winds blow over the southeast counties from the Blue mountains, and over Montana from the Rocky mountains. The northerly winds occur when the barometric pressure is high over the Canadian provinces, while the southwest winds occur when a low pressure area is moving eastward over the Canadian provinces, and the high pressure area is over Utah and southern Idaho. The general southwest current may, in some localities, be so modified by the local topography as to blow from any quarter from south to northwest.

STATE OF WEATHER.

It is not only of interest to know the amount of water that is precipitated over a country in the form of rain and snow. The time and duration of its occurrence are very important. Rain to the amount of .01 of an inch or more falls on an average of 158 days in the year over the western section of Washington, and about 75 per cent. of this occurs in the so-called "wet sea-

son," from November to April. Over the eastern section precipitation occurs on an average of 83 days in the year. It is distributed through the seasons about as in the western section; possibly there is a larger proportion of summer showers in the extreme eastern counties. July and August have very little rain, and sometimes none. Occasionally the first rainy spell sets in in September, more often in October, but sometimes not until November. November, December, January and February are months with many rainy days, and sometimes heavy rainfall. In the Puget Sound country the December rainfall varies from two inches to over ten inches, while in the eastern counties it varies from a little less than one inch to over four inches. March and April are variable, with sometimes little rainfall, and sometimes much. May and June are often showery and cool; such weather is very beneficial to the wheat crops of the eastern counties.

An average year has 152 cloudy days west of the mountains, and east of them 100. The proportion of wholly clear days is in the reverse order — 105 to 152. December is in all sections the cloudiest and rainiest month, having 22 cloudy and 21 rainy days west of the Cascades, 18 cloudy and 12 rainy days east of them. August is the clearest and driest month, having 6 cloudy and 3 rainy days west of the Cascades, and 2 cloudy and likewise rainy days east of them.

WARMTH FROM CONDENSATION OF VAPOR.

The moist winter weather, with frequent cloudy and rainy days west of the mountains may be considered in some respects objectionable, but it should be remembered that the condensation of vapor plays a large part in raising the temperature. In the process of condensation as much heat is generated, or rendered sensible, as was absorbed in producing the vapor. This must be added to the effect produced by the warm winds blowing from the ocean. The result is that the stormy and rainy winter weather of Puget Sound and western Washington is also the warm winter weather, the clear days being as a rule, cold and frosty.

It will be noticed that the mildness of the winter climate has been ascribed to (1) the warm air from the ocean; (2) the production of heat by the condensation of vapor. No part has been ascribed to the Japan current, which was once given credit

LANDSCAPE VIEW OF AN IRRIGATED FARM IN THE SUNNYSIDE DISTRICT, YAKIMA COUNTY.
Near the line of the Northern Pacific Railway.

for it all. Modern meteorologists tend more and more to discredit the powers of the Gulf stream and the Japan current to warm up the western coasts of Europe and America, respectively. Though it may be admitted that the North Pacific stream has a certain heating effect, it is probably indirect, and hasty generalization has probably overrated its amount. The great ocean currents have been only slightly investigated, and observations of their strength and temperature have been comparatively few.

IRRIGATION.

Hon. F. X. Schoonmacher, in his lecture on China, is authority for the statement that when Li Hung Chang, the great Chinese statesman, saw the wide stretches of arid land in Washington and Idaho, he remarked that when the Americans realized the value that would one day attach to the wheat trade with the Orient, they would take up the waters of the Snake river and pour them out upon those great lands, and then no other nation in the world could begin to compete with the United States in providing food stuff for the millions of China and India.

That the waters of the Snake and other large streams of Eastern Washington can successfully be taken up and utilized to make the sage brush plains bring forth abundant harvests, has been demonstrated beyond the shadow of a doubt. Of the three million acres of arid land in the State it is estimated that at least two million acres can be successfully irrigated. When it is remembered that this land, under the magic influence of water, becomes wonderfully fertile, yielding from fifteen to sixty bushels of wheat, eighty bushels of oats, and from five to eight tons of alfalfa, to the acre, when we remember these facts, which are fully verified by experience, we can form some slight conception of the immense addition to the agricultural resources of the State, which the reclaiming of these two million acres of land will make.

Nature, seems to have dealt bountifully with our State in every respect. To some states she has given vast areas of dry lands, which water would redeem, but has failed to place conveniently an adequate supply of water. In the great Columbia river and its numerous tributaries, is an abundance of water to irrigate all the adjacent arid lands without appreciably diminishing its flow. Thirsty as are the lands, their wants can all be supplied without stint, when to nature's provision has been added man's ingenuity in supplying the means of conveying the water from the river channels to where its presence is most needed.

The arid lands of Washington are located in the central and eastern portion of the State—principally in the counties of Chelan, Kittitas, Yakima, Franklin, Douglas and Adams. This does not mean of course that all of the lands in the counties mentioned above are arid, but between them they contain most of that class of lands to be found in the State. The rainfall of this area does not average more than eight inches per annum, and the virgin fertility has been encompassed in a realm of sage brush bearing isolation. But whenever water has been applied through the scientific operations of the skilled hand of man, the desert has been subdued, the seeds for centuries dormant, have burst forth into life, and rich fruitfulness has been the husbandman's reward.

The irrigation systems of Washington are practically the same as those of other states where irrigation is employed. The furrow or rill plan is the most popular. It consists in running small streams or ditches from the main channels to the gardens and fields to be irrigated. Some tracts are handled by flooding, but this is not popular because it has a tendency to bring the alkali to the surface and to carry obnoxious weed seeds to all portions of the land. Once in from ten days to a month is the period for irrigating crops, the time depending upon the nature of the crops. No means of measuring exactly the amount of water to be used has been devised, but about six acre-inches in depth constitutes one application. The duty of water in irrigating crops has been reckoned at one cubic foot per second for every one hundred acres. Under ordinary conditions all cultivated crops may be matured with irrigation equivalent to from twenty-five to thirty acre-inches, applied at times when the plants most need soil moisture.

While sections which have sufficient rainfall to obviate the necessity of irrigation, are relieved of the expense involved in securing water rights and privileges, and are cultivated with less labor than irrigated lands, yet the latter have many advantages which compensate for the added labor and expense. Among these advantages may be mentioned the fact that when the farmer has absolute control of his water supply, and is not dependent upon uncertain rains, the cultivation of the soil becomes an exact science. Knowing his soil, understanding the climatic conditions, and being posted on the condition of the markets, the

farmer has almost unfailing means of determining just what crops he can raise with profit and makes his calculations accordingly. Drouths have no terrors for him, and by being able to regulate the moisture and give his crops just the necessary amount, he is assured of the largest returns for his labors every year.

The soil of the irrigable lands of this State is generally a volcanic ash, or the result of sedimentary deposits in the beds of once extensive lakes. It varies in depth from six to fifty feet. It is porous and of a firm texture, and is easily worked, does not bake and contains the chemical elements essential to great fertility. A chemical analysis, made by the State Agricultural College at Pullman, Wash., shows that the soil of the irrigable lands of the State is especially rich in lime, potash and phosphoric acid, the three constituents most essential to plant life. In addition to the natural fertility of these lands, it is a fact of common observation that they are continually strengthened by the fertilizing properties of the water taken from the streams, the mineral constituents of which operate to postpone for a long period the necessity of using fertilizers.

Irrigation has reached its highest development in Yakima county, and the difference between the appearance of the Yakima valley before it had been touched by irrigation and its appearance at the present time is a splendid commentary on the practical results that have been accomplished. There are between four and five hundred miles of irrigating canals completed, and some two hundred miles contemplated or in process of construction, which, when they are all complete, will water over 700,000 acres of the finest kind of land. The most extensive irrigation enterprise yet attempted is what is known as the Sunnyside High Line, undertaken jointly by the State and the Northern Pacific Railroad Company. It has a length of 114 miles, and will reclaim 285,000 acres of valuable land. In Kittitas, Chelan, Douglas, Walla Walla, Spokane, and Franklin counties, irrigation has progressed to a greater or less extent, and many thousand acres have been turned into productive farms.

Colonization seems to be the most successful means of promoting an irrigation proposition. Water without farmers to use it is an unprofitable investment, and many of the companies

organized for the purpose of building irrigating canals have never realized interest on their bonds because settlement did not follow soon enough. Where purchasers for the land are secured and provision made for settlers to follow immediately upon the completion of the canals, good results have been obtained. This was especially notable in the case of the Selah-Moxee Company, which secured a colony of Hollanders to purchase the lands watered by its canals, and in less than six months after work was commenced, the canal was in the hands of the actual water users. These colonists have small farms, ranging from twenty to one hundred acres, and engage in fruit raising, truck gardening, etc., and are most prosperous.

In order to protect the great watersheds wherein the great rivers of the state take their rise, the government and state authorities have set aside large timber reserves, from which no one is allowed to cut the trees, or allow sheep to graze without special permits. The most important of these reserves is the Pacific, which is 212 square miles in extent, and embraces portions of Pierce, Lewis, Kittitas and Yakima counties. Mount Ranier is about the center of the reserve. With these watersheds protected by forest reserves the farmers may be assured of a continual supply of irrigation water, with its silt-laden fertility.

It remains only to indicate the range of crops that may be raised on irrigated soil to show its full agricultural value.

Fruits of all kinds, apples, pears, prunes, cherries, peaches (Wenatchee and Yakima peaches are famous all over the land), apricots and all the deciduous fruits attain on this soil a degree of perfection and a fineness of flavor unrivalled by any other section in the world.

Hay and grains of all kinds may be produced in the quantities mentioned at the beginning of this article, and alfalfa, which belongs to the clover family and possesses great fattening and milk-producing qualities, yields from five to eight tons per acre, it being possible, in the warmest valleys, to cut from two to four crops a year. It is an ideal stock food, upon which sheep, cattle and hogs are kept in prime condition.

Corn matures perfectly in the low lying valleys, and yields from forty to fifty bushels to the acre. It is not, however, one of the leading staples, on account of the limited area adapted to

its proper ripening. Broom corn is also successfully raised, and yields about one-half ton of brush and one-half ton of seed to the acre.

That hops thrive on irrigated lands and yield profitable crops is attested by the fact that Yakima county leads the state in hop production.

In fact all manner of crops, grains, vegetables, grasses, fruits, anything that can be raised in the temperate zone, grows to perfection and yields enormous returns on the fertile soil of these arid lands when reclaimed by successful irrigation.

AGRICULTURE.

The peculiarly favorable climate of the State of Washington and the wide range of climate due to differences of altitude and rainfall adapt the State to almost every class of crops that are grown outside of the tropics. A fuller account of the climatic divisions of the State is found under the article entitled "Dairying," and the crops grown in various sections are briefly treated there. This article will treat more especially of certain crops that are grown extensively in certain parts of the State.

SOIL.

The most extensive area of soil of uniform character is situated on the upland prairies of Eastern Washington. This soil has been formed by the disintegration of basaltic or lava rocks. It is of a dark color, of fine texture and contains no gravel and almost no sand. It is what might be termed a clay loam, especially in those parts where the rainfall is heaviest. Toward the central part of the State, where the rainfall is lighter, these upland prairie soils become slightly coarser grained and are hence lighter in texture than near the mountains where the rainfall is heavier. This prairie soil is exceedingly easy to till if ploughed when in proper condition. It is exceedingly tenacious of water, and when saturated with the winter rains it holds enough moisture to ripen crops perfectly without any rain after the 1st of July. Eminent authorities have stated that this upland prairie soil is the best wheat soil in the world and the experience of farmers in this section during the past twenty years seems to justify this conclusion. As is the case in all new countries where the soil is well adapted to the growing of grain, much of this land has been kept in wheat exclusively for the past twenty or twenty-five years, and it is still in a fair state of fertility, yields of thirty to forty bushels per acre being expected by the better class of farmers; in fact, some of our best farmers harvest forty bushels to the acre as a general thing. Other

crops that are adapted to this soil are oats, barley, potatoes, flax, corn (for fodder), and all the root crops, apples, cherries, berries, pease. The system of farming is as yet rather crude; for the most part it consists of growing a crop of wheat every other year and allowing the land to lie idle the other years. During the idle years the land is ploughed in the spring, and the foul stuff which comes up on the ploughed land is pastured off. In the dryer parts of the region in question the summer follow land is harrowed frequently, with a view to preventing loss of moisture. It is also kept free from weeds and foul growth for the same purpose.

The soil in the irrigated sections differs materially in character from that of the upland prairies, being coarser in texture and more inclined to sand, and in some places gravel, yet much of the irrigated land is intermediate in character between sand and the clay loam of the uplands. Most of the irrigated land consists of what was formerly the beds of lakes. The soil in the irrigated sections is eminently adapted to fruit, garden vegetables, corn, alfalfa, all of the tame grasses and clovers, melons, etc.

In Western Washington there are several distinct types of soil, differing greatly in agricultural value. Perhaps the most valuable lands of Western Washington are what are known as alder bottoms; that is, land that was originally covered by alder bushes. This land is a loose loam, very rich in organic matter, and when properly handled produces immense crops of almost anything the farmer may desire to grow. Another class of land may be called semi-peat land, like the last except that there is more organic matter. When properly manured this land produces fine crops of garden vegetables, berries, etc. There are also extensive deposits of sandy land in Western Washington. When the sand is mixed with a fair proportion of clay these lands are very fertile and grow all kinds of crops that thrive in a porous soil. There are a number of sandy stretches that lie so low as to be saturated with water from the rivers or from the Sound, at a depth of a few feet below the surface; these lands are devoted largely to oat growing and the crops that are produced upon them are prodigious. Authentic records have shown a maximum yield of about one hundred and fifty bushels of oats per acre, while the average yield is perhaps between eighty and

WASHINGTON HARVESTING AND GRAIN SHIPPING SCENES.

one hundred bushels. All of the above classes of soil may be called lowland types. On the upland soil there are two principal types known to the writer. One consists of gravelly, glacial soil which dries up entirely in summer and is not well adapted to general farming. The other consists of what is known as the shot clay, so called from the presence in it of small nodules resembling shot. This soil when properly handled is productive.

CEREALS.

The principal cereal grown in this State is wheat. Practically all of the wheat is grown on the upland prairies of Eastern Washington and in Kittitas valley. On the irrigated sections some 2,000,000 acres of wheat are harvested annually. In this State the average yield, as given by the United States Department of Agriculture, is about twenty-three bushels per acre. The varieties of wheat which are most generally grown are as follows: Where the rainfall is twenty inches or more, "Little Club;" where the rainfall is fifteen to twenty inches, "Red Chaff;" where the rainfall is less than fifteen inches, "Blue Stem." Many of these varieties are grown in small areas, and by individual farmers here and there, but the three varieties named constitute the bulk of the wheat grown. These are all spring wheats. During the past seven years the state experiment station has been experimenting with winter wheats, and it will, beginning with this season, be able to send out in small quantities seed of wheats which have proven adapted to this country.

The cereal next in importance to wheat, is oats. In the wheat districts of Eastern Washington oats are grown quite extensively, mostly for horse feed, both as hay and as grain. In Western Washington oats are by far the most important cereal; the sandy lands, especially when they lie at low levels, being devoted quite largely to the growth of oats.

Barley is grown extensively in many localities all over the state, especially in the wheat districts of Eastern Washington, but its cultivation is confined more or less to communities. Dayton, in Columbia county, is noted for its out-put of barley. A great deal is grown in the vicinity of Walla Walla, and it may be grown anywhere in the wheat belt. The state experiment station is experimenting with barleys with a view of ascertaining what varieties are best adapted to the State, and it is be-

lieved that within another year it will be able to send out varieties that will stand on low lands.

Rye is not much grown in the State, but in that part of the prairie regions that are too dry for wheat, rye has shown itself to be a valuable crop. It does exceedingly well all over Eastern Washington.

Corn, which may be included here, may be grown for fodder successfully in all parts of the State. For grain it may be grown in all parts of Eastern Warhington where the altitude is not over about 1,500 feet above sea level. During the past seven years the silos on the state experiment farms have been filled every year with the finest quality of corn ensilage.

Flax, though not a cereal, may be included here. It grows well in all parts of the State. It has been fully demonstrated that flax for fiber and for seed succeeds admirably in all parts of Western Washington. There has been no experimentation with fiber flax in Eastern Washington so far as the writer is aware, but flax has been grown for seed in the wheat belt very successfully.

HOPS.

The State of Washington is one of the leading hop growing states. There are two principal hop sections, namely, the low, warm, irrigated valleys of Eastern Washington, and the low lands of Western Washington. The principal hop centers are in the Yakima valley and the Puyallup valley. At one time the largest hop curing establishment in the world was located at Puyallup. On account of the great fluctuation in the value of hops the cultivation has been somewhat precarious in the past, for which reason hop cultivation has not been developed to its fullest possibilities in this State. With an assurance of the continuation of fair prices for hops, this State could produce a large quantity of hops of high grade.

GRASSES AND FORAGE PLANTS.

The subject of grasses and forage plants is intimately associated with that of live stock production. All parts of the State, with the possible exception of that part of the wheat belt where the rainfall is from ten to fifteen inches per annum, are eminently adapted to the production of feed for live stock. In Western Washington the leading forage crops are timothy and clover,

alsike clover, red top, peas and oats sown together, oats, and all the root crops. All the above mentioned crops are at their best in Western Washington. In the irrigated portions of the State alfalfa is so eminently adapted to conditions of soil and climate that it is almost the only forage crop grown, not because other forage crops do not thrive in the section in question, but because alfalfa thrives better. This plant produces on irrigated land in this State three good crops of hay per year, and in some seasons four, as for instance in the year 1900. The total yield per acre averages perhaps five tons of hay. The best farmers average seven to eight tons per acre. This hay is either sold out of the country entirely or fed during the winter months to range cattle. While both of these methods of disposing of the hay are still common, during the past few years an increasing amount of this hay has been feed to dairy cows with the most gratifying result, and there has been a very rapid development of the dairy industry in the alfalfa sections. This alfalfa land also produces great crops of timothy and clover, orchard grass and clover, Italian rye grass, meadow fescue, etc.

In the wheat lands of Eastern Washington a number of grasses have shown themselves to be of value and a few are here briefly discussed.

Brome Grass.

This grass has attracted a great deal of attention during the past few years and has been very generally introduced amongst the farmers in the wheat section. It is a strong grower, yielding forage that is well relished by all kinds of stock, yielding the first year considerable fall pasture, the second year large crops of hay or seed and in subsequent years abundance of pasture which makes a very close sod. After four or five years its growth consists mostly of a dense growth of leaves near the ground, only comparatively few seed heads being sent up. It remains good pasture apparently indefinitely. It is adapted to all of the wheat lands of Eastern Washington. It also does well on land too dry for wheat. It also does quite well on the glacial uplands of Western Washington.

Orchard Grass.

When properly handled, orchard grass is one of the best grasses in all parts of the State of Washington. When cut for hay it must be cut soon after the blossom falls, or it becomes so

woody that stock do not like it. It is an easy grass to establish, and unlike brome grass it does not thicken up as time goes on and hence it continues to be a good hay grass indefinitely. We have one field seven years old that has had no especial attention that yielded this year a little over one and one-third tons of orchard grass hay per acre. It has yielded almost exactly this amount every year for six years; but the year before that, the second year of its life, it yielded over two tons per acre. The worst objection to orchard grass in Western Washington is that it matures so early that haying time comes before the spring rains are over. This objection does not hold in Eastern Washington.

Tall Meadow Oat Grass.

This is one of the grasses which has shown itself adapted to all parts of the state. It grows very tall, and yields well both as hay and as pasture. Like both the preceding grasses it stands pasturing well. Stock do not like this grass at first and have to become accustomed to it before they will eat it readily. It is a good grass in this state.

Italian Rye Grass.

For low lands in Western Washington and for pasture in the irrigated parts of the State, Italian rye grass in connection with red clover is an excellent thing; however, there is the objection in Western Washington that it matures early—no earlier, however, than the red clover. This grass is better relished by stock than any other grass that grows.

Meadow Fescue.

This is another grass that does well all over the State, and one which stock relish very much. The variety known as tall fescue is perhaps more valuable than the meadow fescue. The cultivation of this grass should be extended in all parts of the State.

Timothy.

Timothy is the standard hay grass of Western Washington, being frequently sown with red clover or alsike clover. It yields large crops for the first two or three years. It does well also on irrigated lands in this State, and on low lands in the wheat region.

Red Top.

This grass is not generally popular, but those who know its value and understand how to handle it regard it as one of our most valuable grasses. It is especially adapted to very wet lands, particularly in the colder parts of the State. It is also an excellent pasture grass when stock have learned to relish it, which they will do in a short time.

Red Clover.

In no part of the country does red clover grow more luxuriantly than in Western Washington, and it is a standard forage plant in that section, being sown usually with timothy; sometimes with orchard grass, or Italian rye grass. It also does remarkably well in the irrigated lands of Eastern Washington. In those parts of the wheat belt where the rainfall is twenty inches or more, red clover does very well. On the state experiment farm this plant yielded last year a little over three tons of hay per acre, but in order to get it to grow satisfactorily on the wheat lands, the clover bacteria must be introduced into the soil. This may be done by getting a quantity of dirt from an old clover field and scattering it over the land where it is desired to sow clover. This precaution has enabled us to secure the best results with clover on the wheat lands.

Pease.

Pease do admirably in Western Washington and in the wheat belt. Several of the large eastern seed houses grow their seed pease in the wheat belt of the State of Washington on account of the fine quality of seed produced here. In Western Washington pease and oats constitute the finest quality of hay for dairy cows that is grown. The same may be said in regard to the wheat belt.

THE SUGAR BEET INDUSTRY IN WASHINGTON.

The sugar beet industry in Washington has now passed the experimental stage, and seems destined to become a most important factor in the further industrial development in the State. It will have a peculiar and most desirable effect upon the agricultural practices now common in the State. During past years extensive non-diversified farming has been the rule, and it has been repeatedly demonstrated that such a method does not give permanent prosperity to agricultural communities. Much has been said in recent years concerning the great desirability of a diversity of farming operations, as to prosperity and content among the farming population. But the great drawback to a change from the one crop plan to general diversity in farming has been the difficulty experienced in finding suitable crops for diversification. In the agricultural sections of Washington, sugar beet culture can furnish a most excellent crop for this purpose. Successful sugar beet culture demands the intensive culture of comparatively small areas when compared with the vast acreage devoted to wheat raising. Aside from the financial advantage accruing from beet culture, the farmer receives exceeding great benefits in the improved soil conditions that result from intensive culture.

The well known beneficial results of beet farming that have been obtained in other states are now beginning to be realized here. Skepticism on the part of farmers and others as to the possibilities of Washington as a sugar producing state, is rapidly giving place to the conviction that the sugar beet industry is soon to become of vast importance.

It is hardly necessary to review the work of experimentation that of necessity preceded the establishment of the industry. Suffice it to say that ample demonstration of the capability of Washington soil and climate to produce sugar beets of a superior quality was made through the work carried on by the State Agricultural Experiment Station.

In due time, in view of the favorable outlook as shown by the results of the work just mentioned, a factory for the manufacture of sugar from beets was erected at Waverly, in Spokane county. Beets were contracted for, and the first sugar was made during the month of January, 1900. Hence, at the present time, the Waverly factory has had two campaigns, although the supply of beets has been only a fraction of the number of tons demanded by its capacity.

During these two years the experience of the individual farmers who engaged in beet raising has not been very satisfactory, but this was to be expected. To raise a new crop with strange habits—a crop which demands an entirely different system of farming—very naturally involves more or less disappointment as to results. Furthermore, climatic conditions are not always all that one might desire. This lack of practical experience in beet raising, and the untoward season of last year, have led to some dissatisfaction with beet raising. However, this year conditions are very different. The experience gained during the last two years has been used; farmers are profiting by their past mistakes, and the cultural difficulties encountered have been easily overcome. Moreover, the temperature, rainfall, and the distribution of the latter, during the present season have been such as to produce almost ideal conditions for beet culture. The outlook for this year's crop is exceedingly flattering. From present indications the yield will approximate fifteen tons per acre, and the sugar content will be high. The acreage devoted to beets this year is not as large as it ought to be, but in all probability next year will witness a very great extension of the industry and the Waverly factory running full capacity.

Generally speaking, the soil and climatic conditions of many sections of Eastern Washington are peculiarly adapted to sugar beet culture, and as soon as farmers demonstrate their willingness to raise the requisite acreage of beets, more factories will be established for the manufacture of beet sugar. It is not too much to predict that before ten years have passed Washington will be producing more than 10,000,000 pounds of sugar annually.

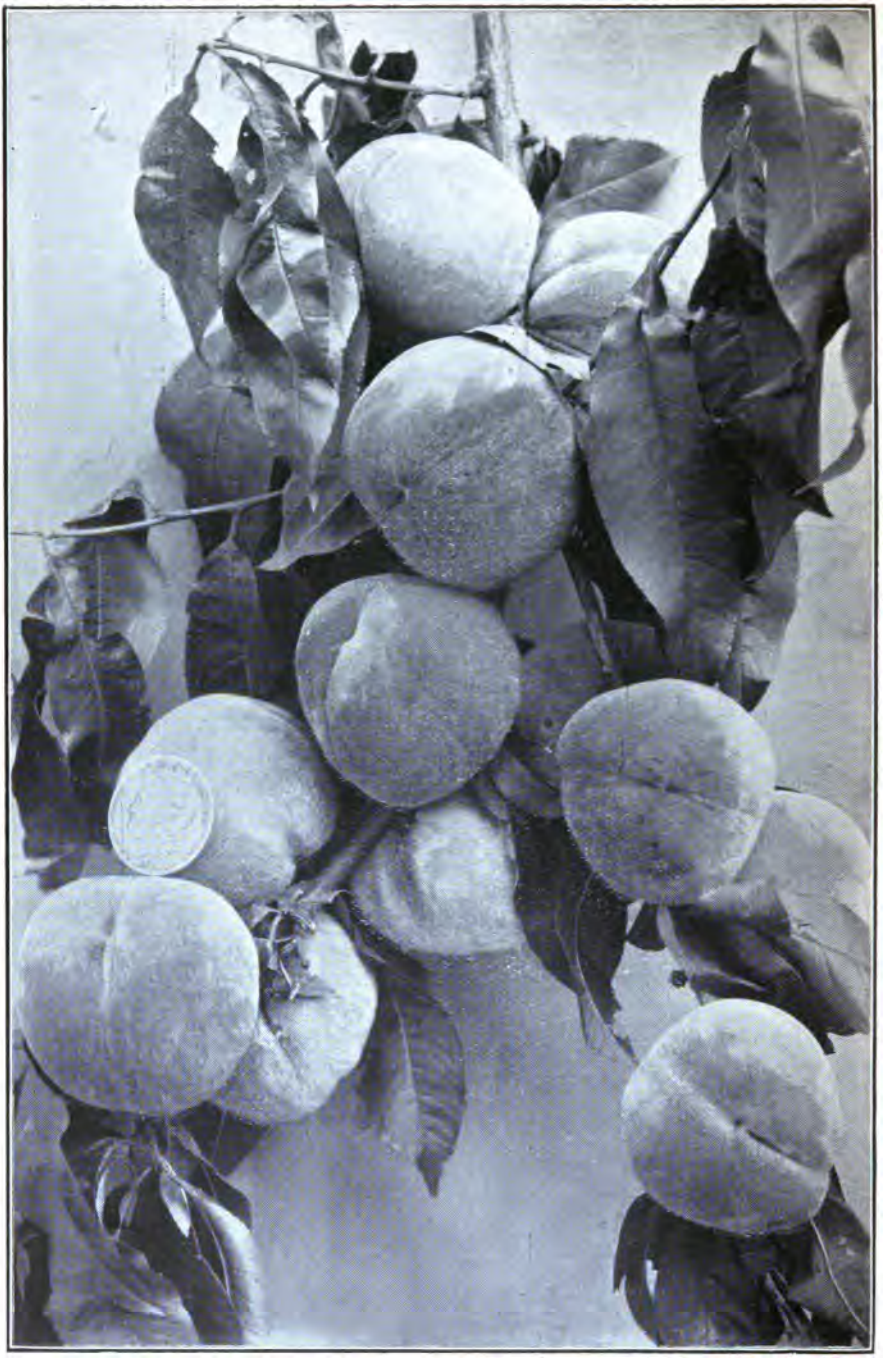
THE LIVE STOCK INTERESTS OF WASHINGTON.

The live stock interests of Washington are in a state of progression. It has been only a few years since the whole area of the State was subject to the range industry, and sheep, cattle and horses roamed at will over the vast prairie pasture in every section where water was available. With the rapid occupation of the lands available for growing wheat, particularly in Eastern and Southeastern Washington, the stock range has been greatly curtailed, and cattle and sheep owners have been forced to graze their stock on pastures less desirable for this purpose. Sheep have gone into the mountains, cattle are taken to the river bluffs and sections more or less arid.

Through the breadth of the State the free range is being so rapidly restricted by the advent of settlers and the fencing of open tracts that in a few short years the range industry will be a thing of the past. With the coming of the settler and homesteader a new order of management will overtake our live stock interests. All the advantages which made Washington live stock famous in the old days will remain, together with added advantages of increased care, better shelter and richer food. With the new order there will of necessity be an adjustment of the business, which will doubtless assist in its advancement. The State is destined to become famous for its production of live stock in the near future, and the reasons for such development are not only evident, but conclusive.

NATURAL ADVANTAGES.

As a matter of fact the State offers almost every climatic condition that may be desired by the stockman seeking a location. The dairy interests find a congenial home in the moist, timbered region west of the Cascades, which is capable of furnishing rich pasturage almost the entire year, and where the cereals grown lend themselves naturally to the requirements of the silo. The same condition prevails in the warm, irrigated valleys, where alfalfa



EASTERN WASHINGTON PEACHES.

The above is from a photograph of peaches grown in the Wenatchee Valley The coin shown in picture is a silver dollar.

grows so luxuriantly and corn can be cultivated with success. Beef cattle find a congenial home in the grain growing sections of the State, for it is a law of nature that wherever grain can be successfully grown there will be found also the conditions and environments suitable for the animals which subsist on the same.

Many favored regions are particularly adapted to live stock production, in that within reasonable distances of them can be found high, rolling pasture lands, where will be found the ideal conditions for summer grazing, and also low, warm valleys and canons where the blasts of winter are scarcely felt.

The healthfulness of the State is an advantage that should not be overlooked. The usual maladies which keep the eastern stockman in anxiety are not prevalent, and where they do occur are usually not virulent and can be easily controlled. Black leg in cattle, the terror of the Southwest, is practically prevented by vaccination. Hog cholera and swine plague is always sporadic and occurs only after the importation of swine from the East. Diseases of sheep, particularly the stomach worm and other internal parasites, are as yet unknown. The equability as well as mildness of the climate of all parts of the State, except such as are mountainous, make it desirable for diversified stock growing. There are no sudden changes of temperature, and with reasonable care stock can be protected from the inclemency of the winter months. The feeding period for cattle and sheep is very short, and unless there is deep snow, which does not often happen, stock can thrive throughout the winter in the open fields. Insect pests give little trouble to stock. The cattle are not harassed by swarms of flies which make life a burden to them in more humid regions. The low temperature at night, which is a marked feature of the climate of most of the State, appears to be unfavorable to the propagation of these annoying pests. This single item is an advantage which cannot be overestimated. The Washington stockman does not need to make allowances for the terrors of "fly time."

MARKETS.

The State of Washington possesses peculiar advantages in the way of present and future live stock markets. Aside from the local demands for horses we have the most accessible source of supply for the Pacific trade, already extensive and not likely to decrease for many years to come. We hold the gateway, also,

to Alaska. The same fact holds true in the case of meat products. With all our vast herds and flocks within the borders of the State, we still find the large packing houses of Omaha and Kansas City shipping carload after carload of perishable meat products at great expense for transportation and refrigeration into the large cities of our state. The trade in cured meats is almost monopolized by these establishments — thanks to the shortsightedness of the railroads. This, in the order of things, must ultimately change and these demands for food be supplied by our own stock feeders and slaughterhouses. The market already exists, the question before the farmers of the State is simply to control them in their own interest. Without doubt, this market will keep in advance of the supply rather than fall below it. The rapidly increasing population of our state, particularly of our cities, will take all our supply in the way of meat products unless our stockmen greatly increase it in the near future.

HORSES.

By far the greater number of the horses hitherto produced in the State have been range bred and wear the marks of the branding iron. With the extension of farms and ranches the number of horses produced in enclosures is rapidly increasing and the character of the animals materially improved. Practically all the horses used in the industries of the State are home bred, and when we consider the grade of animals required for the transportation of the output of the mines, the demands of stage service and the work in the logging and lumber camps, not to mention the varied uses of the farms and the traffic of our growing cities, it speaks well for the value of the stock produced.

It is a significant fact that the agents of the United States and other governments have scoured the State for suitable animals for military service, and many thousands have been disposed of for such purposes. Army purchasers find our horses sound of wind and limb and showing special fitness for hard usage. There is a great opportunity open for those desirous of producing horses for the trade. The values on all suitable stock are steadily advancing and the open market still unsupplied.

The horseman possessing an enclosed range, as well as the farmer with his smaller farm and more carefully cultivated lands, can produce a better horse than was ever bred on the open range.

The cayuse of the old days is rapidly disappearing and well bred animals taking their places. There is a remarkable opening for the breeding of mules. So far this opportunity has been sadly neglected. Our proximity to the mines, where the mule is indispensable, and the demands for military transportation service, give us an advantage over eastern states, which have hitherto held the lead in the production and marketing of these animals.

CATTLE.

Washington is just awakening to the value of pure bred beef cattle. There are a few well bred herds in the State, some of them well established, but it is not creditable to us that some of the best breeds of beef cattle are scarcely represented. The Hon. A. J. Splawn, of North Yakima, has clung to his extensive herd of Herefords for many years and is now beginning to realize on his investment. His recent purchases of new blood procured at one of the large eastern sales, together with a pair recently secured in Iowa by the Washington State Agricultural College, are the only transfers of cattle of this breed coming to the State of Washington in several years. Aberdeen Angus cattle are practically unknown in Washington, but the beginnings of small herds have already been made, and the breed will doubtless maintain a foothold. By far the strongest per cent. of beef cattle are of Shorthorn extraction. Several show herds are already in existence and many carloads of pure bred animals have found their way to the State during the past year. Most of these have been retained on the farms and ranches of our more settled sections.

The openings for fine stock ranches are numerous, and proposing settlers would do well to consider this field as a most promising and profitable one.

SHEEP.

So far sheep have been confined to the ranges solely and grown chiefly for wool. The fortunes made by men who have stuck to the flocks through adversity and prosperity stand as witness to their value. In the future the immense flocks are bound to be reduced, and in their place will be found thousands of smaller flocks kept on enclosed pastures, grazing on the summer fallow and stubble fields of the wheat growing regions, and

fed on the surplus grain there produced. The type of sheep will doubtless change from a distinct wool bearing animal to one more adapted to mutton. It is a significant fact that the values of Washington sheep exceed those of any other western state, with the exception of Wyoming. The following table of figures is taken from the statistician's report for the United States government, and supports this statement:

States and Territories.	*1893.*	*1900.*	*States and Territories.*	*1893.*	*1900.*
Texas	$1 60	$1 92	Utah	$2 38	$2 59
Montana	2 58	2 84	Nevada	2 43	2 91
Wyoming	2 75	3 51	Idaho	2 50	2 80
Colorado	2 52	2 86	Washington	2 83	2 13
New Mexico	1 50	2 17	Oregon	2 40	2 67
Arizona	2 25	2 34	California	2 32	2 85

The weight of fleece for the State is far above the average, and has given our wools a high standard in the eastern markets. The rolling table lands of Washington are peculiarly adapted to sheep, and as the area devoted to tame grasses is increased there seems to be no reason why the numbers bred and fattened should not be largely increased.

ANGORA GOATS.

On the western slopes of the Cascades, where the problem of clearing land from underbrush confronts the new settler, there is found a promising opening for the breeding of Angora goats. As is well known, this animal thrives principally on brush land, and is a great factor in redeeming such for the plow. The value of the mohair produced makes them practically as profitable as sheep, and the high prices the animals bring to their owners make them most desirable property. They are destined to take a prominent place as one of our profitable domestic animals.

HOGS.

It has been a common opinion among stock feeders that the profitable hog can be produced only in the corn growing sections of our country. While it will probably be true that the greatest amount of our pork products will come out of the corn belt, we are assured that Washington will in the near future supply its

own requirements for pork, and even become a shipper to other markets. It has been demonstrated time and again that barley stands a close second to corn as a swine food, and wheat will bring far above the present prices when fed in this way. With both these cereals and many others, in abundance, and other advantages, there is every reason to hope for the extension of the production of swine.

This may require some modifications of the type of hogs needed for our foods, as well as markets, but if experience proves the existing breeds which have made their reputations in corn growing states are not adapted to our small grain products, we feel assured that others can be found to take their places. In other words, we propose to supply our own demand for pork, even if we are compelled to evolve a new hog to do this.

The farmers of Washington who are making money are those who are combining stock raising with their other operations. Dairying and haying go together. Grain growing and cattle and sheep, and even our fruit orchards, lend themselves to profitable pork production. The stable and most intelligent system of agriculture is that which recognizes and combines all these and makes them work together in mutual interest.

POULTRY.

It is a common assertion in eastern stock and poultry journals that there is more money in poultry than in any other kind of stock, according to the money invested. If that assertion be true, what must be the profits of the industry in this State, where the prices of eggs vary from 15 to 50 cents per dozen, and table fowl from 15 to 20 cents per pound dressed, in the market. We are not able to state the percentage of the product consumed that is produced within the State, but it is safe to say that it has not amounted to more than one-half for any year in the past decade.

To see whether there is a profit in the business let us take as an instance the statement made by a poultry raiser in Nebraska, as follows: "One bushel of grain (wheat, worth 75 cents) will keep a hen one year. The average hen of the right breed will lay 180 eggs, or fifteen dozen, during the year, this being a low estimate, which at the average price of 25 cents a dozen amounts to the sum of $3.75, leaving a net profit to the credit of the hen

of $3." The ordinary farmer who has plenty of range for his chickens can easily keep 100 laying hens, and in addition to the profit, which, according to the foregoing figures, would amount to $300, he could have a large number of table fowl to dispose of, thus augmenting the aforesaid profits from the business.

For persons engaging in the poultry business it is always well to consider the breeds best adapted for all purposes and suited to the climate of the section of country in which they reside.

There are a great many varieties of chickens, of which we will mention a few, viz., the American class, known as Plymouth Rocks, of several colors, Wyandottes, Javas, and several others; the Asiatic class, composed of Brahmas, Cochins, Langshans; the Mediterranean class, which are the different varieties of Leghorns, Minorcas and Black Spanish. Among others are the Hamburgs, of the Hamburg class; the Houdans, of the French class, and the Dorkings, of the English class, besides Bantams and other game birds of many varieties.

The birds best adapted to cool climates are the Brahmas and Cochins, they being heavily feathered and consequently able to withstand extreme cold. The Asiatic fowls should be avoided where there are wet soils and a humid climate. The birds best adapted to the State of Washington, where our winters are mild, are the Leghorns and Minorcas for eggs, and the Plymouth Rocks and Wyandottes for market, these all being active birds and good foragers.

Care should be exercised in the breeding of fowls, as good results may be brought about by the mixing of different varieties. Also, careful and systematic feeding should be observed. The same care that is exercised in feeding should be taken to see that they are not overfed, as overfeeding produces worse results than not feeding enough. When fowls are confined they must be provided with grit, green feed, and should have a dust bath. They should have, once or twice a week, a ration of meat scraps and crushed bone meal or granulated bone. They should also be provided with properly ventilated houses, and if confined should have a scratching floor, furnished with clean straw and chaff. The houses and roosts should be kept thoroughly clean, and it is advisable to apply a coat of whitewash about twice a year.

THE STATE FAIR.

The legislature of our State has not been unmindful of the importance of fostering the agricultural interests of our State. This is evidenced by the fact that the first duty of this Bureau is to collect, systematize and present in its biennial report to the legislature, statistical tables relating to agriculture. The importance of this industry has been recognized by nearly all of the states for years past, and upon this subject we quote the following interesting excerpt from Washington's message to Congress in 1796:

"It will not be doubted that with reference either to individual or national welfare, agriculture is of primary importance. In proportion as nations advance in population and other circumstances of maturity, this truth becomes more and more an object of public patronage. Institutions for supporting it grow up, supported from the public purse, and to what object can it be dedicated with greater success than the establishment of boards composed of proper characters, charged with collecting and diffusing information, and enabled by premiums and small pecuniary aids to encourage and assist a spirit of discovery and improvement. This species of establishments contributes doubly to the increase of improvements, by stimulating to enterprise and experiments, and by drawing to a common center the results everywhere of individual skill and observation, and speeding them thence over the whole nation. Experience accordingly shows that they are cheap instruments of immense national benefits."

Agricultural fairs have always been considered, in nearly all of the states, as a valuable adjunct to the progress of this industry, and they are commended as a worthy means to desired ends.

Appreciating the value of exhibitions of this kind, the legislature of the State several years ago made the necessary appropriations for the purchasing of permanent grounds, and State fairs have been regularly held since that time at North Yakima. These exhibitions have been well patronized, and we believe have been productive of great and lasting benefit to the agricultural interests of our State.

DAIRYING IN WASHINGTON.

The dairy industry is confined more or less closely to a belt extending across the northern part of the United States, and includes the southern tier of provinces in Canada. The northern limit is fixed by the difficulty of growing forage for cattle and the expense of stabling cattle during long winters. The southern limit, which is not so definite as the northern, is fixed by the difficulty of handling milk in warm climates. In recent years the southern limit has been considerably extended, and as improved dairying methods are introduced, it may be still further extended. On the Pacific coast, because of the influence of the Japan current in modifying extreme cold in northern climates and extreme heat in the south, the dairy belt expands until it extends from southern California almost to Alaska. The State of Washington is centrally located in the dairying region of the Pacific coast, and no part of the American continent is better adapted to this industry, by virtue of climate and crops, than is this State. The industry has several advantages for farmers. In the first place, when a farm is run as a dairy farm the fertility of the land can be kept up indefinitely, and by intelligent management it can even be increased. Another advantage which the dairy industry offers, is that it brings in a fair income at short and frequent intervals. It also gives the farmer and his family opportunity to employ themselves at something profitable every day in the year. Another advantage is found in the fact that when prices are low those who are not well adapted to dairying soon drop out and leave the field to those who are well equipped and who follow the business intelligently. Hence, a long period of depression in the prices of dairy products is practically an impossibility.

In the last few years dairy prices on the coast have been such as to make the business distinctly profitable. In fact, there seems to be little danger of over-production now, since the development of our Alaskan markets and the beginning of considerable commerce with Oriental countries. There is therefore room

CURING ALFALFA ON A WASHINGTON FARM.

for extensive development of the dairy industry in the State of Washington.

During the past four years there has never been a day when the local supply of dairy products was sufficient to meet the demands of our markets. This has resulted in the importation of large quantities of butter and cheese from the East, and when this condition exists, the prices of dairy products on the coast will necessarily be eastern prices plus transportation charges. There is every reason to believe that this condition will continue indefinitely, so that we may expect good prices in the future.

The State of Washington is divided into three very distinct agricultural sections, each producing its own peculiar crops, and each adapted to the dairy industry in its own peculiar manner. That portion of the State which lies west of the Cascade mountains, and which is known as the West Side, is characterized by a rainfall of from forty to sixty inches. Most of the land is heavily timbered. There are some 300,000 acres of land in cultivation in this district. The principal crops are fruits of various kinds, oats, timothy and clover; also garden vegetables. As many of the large mills which grind the grain produced in the inland empire are situated in the coast cities, mill products are plentiful, and relatively cheap. Feed for dairy cows is therefore not expensive. In recent years pease, and oats grown for hay, have been growing in popularity in Western Washington, and offer many important advantages. In the first place, they yield large quantities of forage—four or five tons of hay per acre on good land. In the second place, the hay is ready to cut in the middle of the dry period in the summer, which insures the ability to make first-class hay. When this hay is grown and properly cured, the amount of grain required for feeding cows is greatly reduced.

Creameries are plentiful on the West Side, and there is a good market for all dairy products.

The other two sections of the State lie east of the Cascade mountains. In the central part of the State there is a large area which has a rainfall of less than ten inches per year. Fortunately this section is traversed by several large rivers, the most important being the Columbia, the Yakima and the lower part of the Palouse and Walla Walla rivers. In this section there are 150,000 acres of irrigated land, with considerably more capa-

ble of irrigation. Fruits of all kinds are grown in this district; also large quantities of melons, roots and garden vegetables. The principal field crop is alfalfa, and the amount of forage that is grown by proper methods of farming is remarkable. The average farm probably produces five tons of alfalfa hay per year, at a cost, perhaps, not exceeding $1.50 per ton. Good farms produce seven to eight tons per year. This hay alone makes fairly good feed for dairy cattle; though it is better to feed with it a small quantity of barley, corn or wheat. It is also advisable to feed such succulent foods as carrots, silage, etc., all of which can be grown very successfully in this section. In recent years the dairy industry has had a marked development in the irrigated section of the State. The Kittitas valley, which is also in the irrigated section, has always been one of the leading dairy sections of the State. This valley is at a higher altitude than the remainder of the irrigated portions of the State, and grows a greater variety of crops, including timothy, clover, wheat, oats and barley. The farmers in this valley also grow alfalfa, but not to the same extent as it is grown in the Wenatchee, Yakima and Walla Walla valleys.

The remaining important agricultural section of the State is on the upland prairies of Eastern Washington, where the average annual rainfall is from ten to twenty-five inches per year. Formerly this land was all devoted to wheat growing, about two million acres of wheat being grown per year. At present there is a distinct movement in this section toward a change from exclusive wheat growing to live stock farming. Creameries are springing up all over the wheat district and farmers are beginning to learn that the section is eminently adapted to dairying. Heretofore the difficulty has been in raising suitable forage for cattle. This difficulty, however, has been shown to be purely imaginary, since we have found a large number of valuable forage crops which are at their very best in the wheat section. It has been clearly demonstrated that for permanent pasture in this section, brome grass is a great success. The second and third years this grass also yields a large quantity of excellent hay; after that time it makes such a tight sod that it does not throw up many seed heads, but it makes the finest kind of pasture. For hay, pease and oats are perhaps among the best crops in this section, but on low ground timothy and red clover are excellent, especially where the rain-

fall is twenty inches or more. On upland, orchard grass and red clover are good. Corn can also be grown for silage quite successfully. During the past seven years the state experiment station at Pullman has never failed to get their silos filled with first-class corn silage. The yield is from ten to fifteen tons of silage per acre.

The dairy industry is not quite in its infancy in this State, but from the writer's knowledge of the agricultural possibilities of the various sections of the State, it is fair to assume that during the next decade this industry is to have a large development in all parts of the State.

Some idea of the growth of the industry in recent years may be obtained from the following data, taken from the reports of the State Dairy and Food Commissioner:

YEAR.	NO. OF FACTORIES.			OUTPUT, LBS.	
	Butter.	*Butter and Cheese.*	*Cheese.*	*Butter.*	*Cheese.*
1895	32	6	8	712,385	263,324
1896	77	6	14	1,838,657	554,123
1897	55	15	6	2,094,457	709,364
1898	58	.....	17	2,373,959	588,687
1899	113	.....	29	2,645,361	944,980
1900	194	.....	34	3,736,687	1,016,073

These figures show a healthy growth; and it may be remarked that this increase in production has been accompanied by increase in prices. This has been due to the rapid increase in the population of our cities, the development of mines, and to the marked increase of exports, especially to Alaska. Not only has there been ample market for the dairy products of the State, but the three leading cities have imported, from Oregon, California and east of the Rockies, during the past two years, 3,538,760 lbs. of butter, and 1,163,500 lbs. of cheese. These three cities alone import an amount equal to half that produced in the State. In other words, the home product is barely two-thirds enough to supply the demand, and the demand is growing quite rapidly.

Another advantage enjoyed by dairymen in this State is the protection afforded by our dairy laws against fraudulent dairy

products. This is the only State in the Union in which there are no licenses issued to dealers in oleomargarine. This state of affairs is due to the excellence of our dairy laws, and the faithful and energetic manner in which our dairy commissioner has performed his duty. We are practically free from the filled cheese nuisance, and very little "renovated" butter is palmed off in the State as creamery butter. The result is that the market for dairy products in this State is less disturbed by extraneous influences than anywhere else in the country, and goods sell for what they are worth.

There is room in the State of Washington for thousands of dairy farmers — men with means enough to start with a small herd of cattle and make, say, half payment on a small farm. It is possible for such men, with intelligent management, to own their homes, free of encumbrance, in a few years.

HORTICULTURE.

The horticultural industry of the State of Washington has been steadily progressing, and from the reports from the various sources obtainable, and as shown by the different county reports, it is evident that it must continue to develop until it becomes one of the leading sources of wealth to the State. From the best available information there are in excess of 85,000 acres in fruit trees planted throughout the State. The acreage is about evenly divided, possibly more than one-half being on the east side of the Cascade mountains, as every variety of fruits and berries flourish in that section of the State, particularly in the Wenatchee and Yakima valleys, and also in the Snake river country, which includes the counties of Asotin, Garfield, Columbia, Walla Walla and Whitman.

The climatic conditions are such in this State, the temperature being free from extremes of heat or cold, yet being sufficiently variable to afford nature the elements which produce both size and flavor, as to make fruit culture a profitable industry. On account of these conditions and the fact that we have but few killing frosts, the annual crop of fruit can be depended upon with reasonable certainty.

In the eastern portion of the State, and particularly in the irrigated areas in the counties of Chelan and Yakima, on account of the fertility of the soil and the climatic conditions, the trees begin bearing when very young, and consequently unless guarded against, their producing qualities are short lived. This is no drawback, however, as by proper care and attention in the way of cultivation, pruning, and not permitting overbearing of young trees, the orchardist can obviate this difficulty.

On the west side of the Cascade mountains, owing to the great precipitation producing a heavy growth of vegetation, the fruit trees grow rapidly, and in order to produce the best crops the method of treatment is somewhat different from that employed in the eastern portion of the State, it being necessary

sometimes to resort to summer pruning and root pruning to prevent excessive growth.

The apple is the leading fruit cultivated throughout the State, and in Western Washington pears, prunes, plums, cherries and all the small fruits, are produced in great quantities, while in Eastern Washington, all of the above, together with apricots, peaches, grapes, and fruits of every variety known to the temperate zone, yield abundant crops, remarkable for fineness of flavor. Good varieties of winter apples are always in demand. The markets for the same, owing to our superior commercial advantages, being almost unlimited, and from the culture of this class of fruit alone, great revenues may be derived. Large yields of perfect fruit of all kinds can be secured when proper care is observed in the cultivation and pruning of the trees and in the eradication of pests, the natural enemies of the orchardist. As proof of the longevity of trees in this State, we might cite a few instances. From Baldwin trees, planted over forty years ago in Whatcom county, forty-five boxes of apples per tree have been produced, and at Ferndale, in the same county, from an orchard of three and one-half acres, there were picked last year 2,500 boxes of selected fruit. The trees in this orchard have been planted eighteen years. While in Asotin county, in the extreme opposite corner of the State from Whatcom county, an orchard planted by Red Wolf, chief of the Nez Perce Indians, in 1836, is still flourishing and bears heavy crops of apples each year.

Another important fruit product is the superior quality of prunes produced in the State, Clarke county being the leading prune producing section, although the same is successfully produced in every part of Western Washington, as well as on the hill slopes and valleys of Eastern Washington.

The Wenatchee, Yakima and Snake river sections take the lead in the production of peaches, apricots and grapes, owing to their warmer climate, a condition which is necessary to the production of the better quality of these fruits. The soils found in these valleys seem peculiarly adapted to the production of the most luscious peaches and grapes, of large size and splendid flavor.

Western Washington is especially adapted to the production of cherries. Trees begin bearing young and produce an abundance of the finest fruit.

The orchards of the State are comparatively free from insect pests, and while eternal vigilance is one of the fixed conditions that confronts the fruit grower everywhere, he has abundance of time and opportunity to thoroughly inspect and spray, cultivate and prune them, and this work can be carried on by the farmer when it will not in any way interfere with his usual farm labors or the growing of his other crops. We have not attempted herein to either describe or give any of the remedies for the eradication of fruit pests, but any person desiring information on that subject can obtain the same by writing to the State Commissioner of Horticulture, Tacoma, Washington.

CULTIVATION OF ORCHARDS.

An even temperature, sufficient moisture, and soils rich in mineral plant food, are elements which, when combined, form the most valuable conditions that constitute a great fruit growing section. The State of Washington possesses all of these necessary elements. The humidity of the western division and the abundant and accessible water supply for irrigation in the arid sections of Eastern Washington affords sufficient moisture for any of the classes of fruit suited to their respective localities, from the most tender varieties of grapes to the hardiest kinds of apples. The arid valley soils, rich in mineral compounds; the upland loams and clays, and the large deposits of limestone for the western division, constitute the most valuable lands and natural minerals for extensive fruit culture.

On the uplands of Eastern Washington all kinds of hardy fruits do well, especially apples, and on the bar lands of the different rivers and valleys, and on all lands where irrigation can be had, not only all the hardy fruits are produced, but the most tender varieties are grown very successfully.

SELECTING LOCATIONS.

The selecting of a proper location for an orchard is a very essential point for success in fruit culture. It should be located on ground where the hardpan is not too near the surface. On clay soils there should be at least from two to four feet of depth before hardpan is reached. A cold, wet soil should be avoided as much as possible. In Western Washington the quality of soil is of greater importance than situations or slopes, while in the

eastern portion altitudes and moisture are the principal factors to be observed. The shot clay soils, where there is sufficient depth before reaching hardpan; sandy soils, with a proper mixture of clay, and the volcanic ash soils, with sufficient water, are the leading soils in this State for fruit culture. Soils with natural drainage are particularly desirable, because, being warm, they give up their fertility easily and allow of early cultivation. Tile drainage may also be employed, and many of the hard, wet soils, when tile drained, are excellent for prunes, pears and apples. The sandy loam valley soils are best suited for the raspberry and the blackberry.

SOIL CONSTITUENTS.

From an analysis of the soils made by Professor Fulmer, chemist at the Washington College of Agriculture, we quote the following: "The soils of Western Washington are usually high in phosphoric acid and nitrogen, but have a lower average of potash and lime than the soils of Eastern Washington. On the other hand, the soils of Eastern Washington stand high in potash and lime, but are much lower in phosphoric acid and nitrogen than than those west of the Cascades." As a rule, the soils of Western Washington can be much improved by a free use of lime for fruit culture. Besides the direct benefit to soil and trees, lime acts upon other plant food material, making it available for the roots to absorb. It is of great value to this part of the State that such abundant lime deposits exist here, which are so accessible.

When mature or bearing trees make a foot or more growth upon all shoots, and when the leaves are of good size and dark color, the orchard probably has enough nitrogen.

Potash is generally the most important element to be applied directly to orchards, particularly after trees have reached bearing age. The store of available potash in the soil is much increased by thorough tillage. Wood ashes and the German potash salts are other sources from which it may be obtained. From 500 to 700 pounds nitrate of potash per acre, for orchards in bearing, is good dressing, but there are perhaps few places where this is needed as yet in the State. Phosphorus may be obtained in acid form, in bone compounds, and Thomas slag. From 300 to 500 pounds superphosphate per acre is a liberal dressing for bearing orchards. In general, phosphoric acid is rather less important

SUNNYSIDE—A SIX YEAR OLD APPLE ORCHARD.
This district is in Yakima county, near the line of the Northern Pacific Railway.

in fruit plantations than potash, which should generally be the leading factor in orchard fertilizers.

One of the principal points to observe when starting new orchards is to provide for thorough cultivation, and before trees are planted, especially in dry soils, it must be repeated that it is better to do subsoil plowing before planting the trees. It appears that there is sufficient nitrogen available for all young fruit trees in this State, and there are very few cases where it is necessary to apply any fertilizers before young trees are in bearing. If any trees are not making sufficient growth, it is probable that more tillage is needed or that the land requires drainage.

DIVERSITY OF TREATMENT.

In places like the various river valleys, where the soil is a rich alluvial deposit, porous, and has a natural underdrainage, perhaps less tillage may be required, at least for a time. In such localities there may be an excess of nitrogen, shown by too rank a growth of wood and foliage, and often it is best to seed the ground to clover and other forage crops for a few years, then to plow the ground again. But such conditions are rather the exceptions, and generally considered orchards should not be put into sown crops, and grain crops especially should always be withheld.

IRRIGATED ORCHARDS.

Wherever irrigation is practiced in the orchards of this State the water supply is generally ample. In many cases better results would be obtained if a less quantity of water was used. In fact, the majority of fruit growers on irrigated lands are using entirely too much water for producing fruit crops which are fine in grain and flavor and which have good keeping qualities. Good results have been obtained where the ground has been thoroughly soaked in late fall or early spring, then again after the fruit has set, and as the ground needs the water supply when the fruit is half to two-thirds grown, and follow the irrigation with the cultivator or harrow, when the ground is suitable to work well. As a rule, water should never be applied when it is time for the fruit to begin ripening. Where there is an excess of water at such a stage, almost any variety of fruit becomes soft, and the flavor is destroyed and the keeping qualities are impaired. The prime aim, under any system of cultivation or irrigation, should be to stimulate and induce "capillary action" in every possible way.

NURSERIES.

While we have some nurseries within the State, yet from the best available reports there has been no marked increase recently; but it is to be hoped that those interested in fruit growing will develop this branch of the industry in the State. The greater portion of the trees planted in the State are now shipped from other states, coming chiefly from New York, Louisiana and elsewhere. We have the climate, soil and essential conditions required, and there is no reason why we should not produce our own nursery stock, which, it seems, if produced here, would be more suitable to our purposes.

BULB GROWING.

The soil of the State is also adapted to bulb culture. The elements which enable it to produce fruit in such quantities are also the elements which enable it to grow bulbs possessed of a high degree of excellence. The soil, being well supplied with phosphoric acid, an essential to plant growth as well as in the production of bulbs, affords opportunity for the wide extension of this industry. Experiments have been made for a number of years on Orcas island, with the most encouraging results. Importations were made from Holland, and bulbs of great perfection were produced, it having been found that tulips imported from Holland, which before produced but one blossom, in two years' time produced from three to five bulbs; and so it is with other bulbs. With the market once opened up, the owner of a few acres of land devoted to bulb growing would find abundant profit, as the value of the product from a few acres of land would seem fabulous to those who have never investigated the subject. There is enough good bulb-producing land on Puget Sound to supply the world, and no doubt this will prove a growing and profitable branch of the horticultural industries of the State.

MARKET GARDENING.

All varieties of vegetables are successfully grown in the different parts of the State, as will appear from the county reports elsewhere published, and it seems unnecessary to further enlarge on this subject, except to say that thousands of acres of land are devoted to this occupation, and thousands of tons of these crops are annually produced, which find a ready market.

LUMBER INDUSTRY.

The principal developed industry of the State of Washington is lumbering. That it will always lead the list is of course debatable, but it is safe to say that it will constitute the main source of wealth for at least fifty years to come. When the saw mill is dismantled, the wood-working factory will take its place. Indeed, the State of Michigan, which at one time was the greatest lumber state in the Union, and is still an important factor, produces, according to the census reports, over $49,000,000 worth of wood-working factory products annually. This is considerably more than the present value of the lumber output of this State, and serves only as a verification of the fact that, large as it is, the lumber industry is in its infancy.

There is more timber in this State than in the combined states of Michigan, Wisconsin and Minnesota, and more than in all of the yellow pine states of the South. Professor Henry Gannett, chief of the Division of Forestry, Agricultural Department, says: "With the exception of the redwood forests of California, the forests of Western Washington are among the densest, heaviest and most continuous in the United States. The trees are large, reaching twelve to fifteen feet in diameter and two hundred and fifty feet in height, with clear trunks for a hundred or more feet. The timber is mainly red or yellow fir (*Pseudotsuga taxifolia*), mingled with spruce, hemlock and cedar. The total amount of timber in the State is estimated at 114,778,000,000 feet, board measure. Of this amount, more than nine-tenths, or 103,504,000,000 feet, are west of the Cascade range, the remainder, 11,274,000,000 feet, being upon its eastern slope and in the northern and eastern portions of the State. West of the Cascade range the prevailing species, which forms nearly two-thirds of the entire forest, is red or yellow fir. East of the Cascade range the forests consist mainly of pine. The stand is heaviest in Skagit county. The next heaviest is in Wahkiakum county. In Western Washington the average stand is 18,000 feet per acre; in Eastern Washington it is but 1,200 feet. The

entire area of Washington is 66,880 square miles. Of this, 23,165 square miles are covered with merchantable timber, or 36 per cent. of its area. The entire area of the nineteen counties of Western Washington is 24,900 square miles. Of this area but little more than one-third, or 9,039, is regarded as containing merchantable timber. Twenty per cent. has been cut, 22½ per cent. has been destroyed by fire, and the remainder, 57½ per cent., is still covered with standing timber. It appears that since lumbering began in this region there have been cut from it 36,000,000,000 feet. It appears that there have been destroyed by fire the enormous amount of 40,000,000,000 feet of lumber. In Eastern Washington, out of an entire area of 41,926 square miles, 14,126 square miles only are covered with merchantable timber. Of the area at one time timbered, 1,385 square miles have been cut over, and 244 square miles have been burnt. Upon the west shores of Puget Sound the forest is practically pine fir, and southward as far as the Columbia river, throughout the valley of the eastern slope of the Cascade range, more than three-fourths of the forest is composed of this species. On the east coast of Puget Sound, and southward, between one-half and three-fourths of the forests is composed of fir. Spruce is most abundant immediately upon the Pacific coast. Cedar increases westward toward the coast, and reaches a maximum immediately on the coast. The entire east coast of Puget Sound contains a large proportion of cedar, ranging from one-half to one-fourth of the forests. Hemlock forms quite a noticeable proportion of the forests in the coast ranges and in the northwestern part of the Olympic peninsula."

Prof. Gannett estimates the amount of standing timber in the State of Washington as follows:

KINDS.	*Western Washington.*	*Eastern Washington.*	*Total.*
Fir	66,208,861,000	2,154,110,000	68,362,971,000
Cedar	16,192,276,000	117,177,000	16,309,453,000
Hemlock	14,699,759,000	148,500,000	14,848,259,000
Pine	.....	6,586,520,000	6,586,520,000
Spruce	6,402,605,000	16,610,000	6,419,215,000
Larch	.....	2,078,601,000	2,078,601,000
Oak	.....	3,700,000	3,700,000
Totals	103,503,501,000	11,105,218,000	114,608,719,000

The foregoing is considered a very conservative estimate. It does not credit Western Washington with any larch, oak, alder, maple, cottonwood or Alaska cedar, although there are considerable bodies of each scattered through the different counties. Nor is tamarack included in the estimate of the standing timber in Eastern Washington.

The standing timber, by counties, is as follows:

COUNTIES.	*Total.*	*Average per acre.*
Asotin	81,000,000	1,200
Chehalis	18,579,000,000	21,300
Clallam	9,072,000,000	15,700
Clarke	2,342,000,000	19,000
Columbia	243,000,000	1,700
Cowlitz	5,216,000,000	20,400
Douglas	81,000,000	1,000
Ferry	1,667,000,000	1,200
Garfield	170,000,000	2,000
Island	430,000,000	2,900
Jefferson	4,230,000,000	15,300
King	7,644,000,000	20,500
Kitsap	1,141,000,000	9,000
Kittitas	1,260,000,000	1,000
Klickitat	748,000,000	1,400
Lewis	8,586,000,000	16,500
Lincoln	14,000,000	300
Mason	2,091,000,000	5,600
Okanogan	2,665,000,000	1,100
Pacific	7,813,000,000	16,300
Pierce	6,520,000,000	18,000
Skagit	10,362,000,000	28,000
Skamania	4,661,000,000	17,000
Snohomish	7,709,000,000	19,000
Spokane	766,000,000	2,300
Stevens	2,702,000,000	1,100
Thurston	2,787,000,000	11,050
Wahkiakum	2,974,000,000	27,000
Walla Walla	5,000,000	.....
Whatcom	1,346,000,000	24,000
Whitman	35,000,000	.....
Yakima	893,000,000	1,900

According to the *Pacific Lumber Trade Journal*, the mill capacity of the State on January 1st, 1901, by counties, was as follows:

COUNTIES.	*No. of mills.*	*Daily capacity.*	
		Lumber (ft.)	Shingles.
Asotin	3	65,000	60,000
Chehalis	24	985,000	2,200,000
Clallam	8	50,000	480,000
Clarke	2	80,000	.....
Columbia	4	130,000	.....
Cowlitz	13	120,000	1,540,000
Douglas	2	45,000	.....
Ferry	1	25,000	.....
Garfield	1	30,000	.....
Jefferson	4	480,000	.....
King	38	725,000	4,180,000
Kitsap	2	350,000	.....
Kittitas	9	230,000	.....
Klickitat	9	190,000	60,000
Lewis	26	715,000	840,000
Lincoln	3	75,000	.....
Mason	3	50,000	300,000
Okanogan	4	105,000	60,000
Pacific	11	260,000	540,000
Pierce	17	775,000	1,440,000
San Juan	3	85,000	60,000
Skagit	37	515,000	3,060,000
Skamania	4	120,000	.....
Snohomish	80	1,115,000	7,020,000
Spokane	24	645,000	240,000
Stevens	22	445,000	.....
Thurston	17	290,000	1,020,000
Whatcom	63	420,000	5,540,000
Whitman	7	230,000	60,000
Yakima	3	80,000	.....
Totals	444	9,380,000	28,700,000

The number of men employed and the annual wages paid are as follows:

EMPLOYES OF—	*Number.*	*Wages paid.*	
		Daily.	Yearly.
Saw mills	7,025	$14,050	$4,215,000
Shingle mills	3,800	10,450	2,090,000
Logging camps	8,026	20,065	5,016,250
Sash and door factories	631	1,420	425,925
Planing mills and box factories	1,140	2,565	769,500
Barrel, tub and pail factories	148	323	96,910
Shingle bolt camps	2,000	3,800	760,000
Retail yards	217	434	130,200
Transportation and allied industries	1,015	2,538	761,400
Totals	24,002	$55,645	$14,265,175

The lumber, shingles and other products of the forests find a market the world over. In South Africa, Douglas fir from Puget Sound is just the same excellent wood it is at Cape Nome, Alaska, and the flag pole at the palace of the Emperor of Japan is of the same wood as the one at Windsor Castle. So excellent is the wood for most purposes that all the famous racing yachts use spars from the forests of Puget Sound, and, indeed, royalty does the same — as, for instance, the shipment in June, 1901, of three spars from Vancover, B. C., to England, where they are to be placed on a new yacht to be built next winter for King Edward. In the United States the market for the long lengths and dimensions has no geographical limitations. Derricks for use in the quarries of Barre, Vt., are by no means infrequent, while ship and vessel building material for use on the Great Lakes, and the Mississippi, Missouri, Ohio and other inland rivers, is always in demand. The demand, however, for common lumber, which constitutes 75 per cent. of every tree grown in the State, is rather limited, the domestic market being limited to the states of California, Colorado, Wyoming, Montana and North Dakota. And it is this lack of market which has caused lumbering in the Pacific Northwest to be unprofitable, or rather one of extremely small profit, because the millman depends on the 25 per cent.

upper grades to offset the loss incurred in the sale of the other 75 per cent. It is also for this reason that the lumbermen of the State are working hard with the transcontinental lines to secure immediate reduction in rates which will enable them to reach the densely populated states east of the Rocky mountains.

The volume of the lumber traffic in the year 1900 was as follows:

Domestic.	*Lumber (feet.)*
To California	261,822,058
Hawaii	59,020,233
Alaska	31,105,763
Philippines	4,959,905
Philadelphia	1,261,969
Total domestic	358,169,928

Foreign.	*Lumber (feet.)*
To Australasia	63,612,563
South America	35,202,037
China	17,815,057
South Africa	12,298,256
Mexico	9,220,858
Other countries	17,446,754
Total foreign	155,595,520

The shipments of lumber to the eastern states during the same period footed up are:

	Lumber (feet.)
January	22,515,000
February	23,745,000
March	29,100,000
April	29,445,000
May	30,660,000
June	28,515,000
July	25,875,000
August	22,215,000
September	20,940,000
October	19,620,000
November	16,935,000
December	14,715,000
Total	284,280,000

The combined rail and cargo shipments from this State during 1900 were as follows:

	Lumber (feet.)
By cargo (domestic)	358,169,928
By cargo (domestic)	155,595,520
By rail	284,280,000
Total	798,045,448

An important item in the lumber trade of this State is the manufacture and sale of red cedar shingles. There are today 271

A WASHINGTON FOREST SCENE.

shingle mills in operation in this State, having an aggregate daily capacity of 29,000,000 shingles, or 5,800,000,000 pieces per year. This enormous output, which is more than the combined output of white cedar, white pine and cypress in the East and South, finds a market in every state in the Union except six, and the Washington red cedar is as much in evidence in Texas, the New England states and the Middle West as it is in Idaho, Montana, Colorado and other contiguous states. For lasting qualities and durability they have no superior, and the market is being extended yearly, although the available timber supply is growing beautifully less. The shipments last year (1900) were as follows:

	Pieces.
January	157,800,000
February	238,950,000
March	336,750,000
April	332,700,000
May	305,400,000
June	304,350,000
July	328,050,000
August	347,250,000
September	331,950,000
October	357,750,000
November	273,600,000
December	245,550,000
Total	3,560,100,000

The rail shipments for a number of years are as follows:

YEARS.	*Lumber, cars.*	*Shingles, cars.*	*Total, cars.*
1892	6,750	6,341	13,091
1893	5,365	6,053	11,418
1894	4,283	10,975	15,258
1895	7,039	12,710	19,749
1896	6,486	14,195	20,681
1897	7,737	17,873	25,610
1898	10,460	19,663	30,123
1899	15,035	23,246	38,281
1900	18,952	23,734	42,686
Totals	82,107	134,790	216,897

The percentage of gain in shipments of 1900 over 1899 was as follows:

MONTHS.	*Lumber.*		*All lumber.*	*Shingles by rail.*	*Lumber and shingles by rail.*
	Cargo.	Rail.			
January	48.8	130.8	71.9	61.9	103.1
February	9 6	107.5	40 4	64.9	83.7
March	22.4	56.5	35.0	23.1	36.6
April	9.8	84.1	35.0	*5.5	22.8
May	48.2	62.5	53.5	*31.9	3.5
June	1.6	40.1	14.1	*11.1	7.2
July	12.9	30.8	19.4	4.6	14.7
August	*3 9	*6.4	*4.8	*17.6	*13.2
September	3.8	*9.3	*0.4	*11.8	*14.0
October	7.1	*2.5	4.1	18.2	10.0
November	19 6	*37.7	2.0	*6.6	*18.5
December	38.9	*46.7	8.9	35.1	*1.3
Average per cent. gain	16.7	26.0	19.9	1.9	11.5

* Indicates a loss.

In the foregoing it will be noticed that there is a loss in the rail shipments for several months. This was due almost entirely to the crop shortage in North Dakota, although the labor troubles in the East and the natural depression incident to a presidential campaign were undoubted detriments to the consumption of lumber products. As stated elsewhere, North Dakota is our principal consumer of common lumber, the present freight rates proving an insurmountable obstacle to the general introduction of our common lumber elsewhere. Lumbermen assert that were it possible to secure a reduction of ten cents per thousand in the present rates, it would enable them to ship lumber into Nebraska, Kansas, Missouri and Iowa, and the annual shipments of lumber by rail would be increased 300 per cent. As a result, this State would be the most prosperous in the Union, so far as the lumbering business is concerned.

It is to be hoped that our great transcontinental railroads, which have done so much in the past in the aid of this important

industry, which during the last nine years has paid them in freight no less than $42,643,800, will show a disposition to further foster this trade by reducing the freight rates to such an amount as will enable our lumbermen to make shipments to the states above named, and to compete with the lumber from Michigan, Wisconsin and the Gulf states. The lumber industry during the times of the panic of 1893 and subsequent years was not only the mainstay and support of the State, but also the greatest source of revenue to the transcontinental railroads. In consideration therefor, and for the further reason that their earnings would be greatly increased by the enlarging of the lumber market, they ought in justice to the people of this State make such reduction in their rates as would bring about the desired results.

Notwithstanding the fact, however, that our territory for shipment is thus limited, the lumber industry of Washington is assuming immense proportions, and, as stated at the outset, is the principal source of wealth and prosperity to this magnificent State. And to show something of its magnitude, we might add that if all the cars bearing the lumber products of this State (lumber, shingles and logs) were to be made up into one train, it would reach from Seattle to Denver, a distance of over fifteen hundred miles. Again, if it were possible to imagine a building as large as the Pacific Forest Reserve, which contains Mount Rainier, its roof, which would cover an area of over two hundred and twelve square miles, could be shingled in first-class style by using the output of the shingle mills of the State of Washington for the single year 1900.

MINING AND MINERAL DEPOSITS.

First in importance to the State in her mineral resources are the coal deposits, this being one of the oldest industries of the State, having been carried on more or less for many years. We are enabled to report in full on coal mines and measures, the article having been prepared by the State Coal Mine Inspector, as follows:

COAL MINES AND MEASURES.

One of the State's richest resources is to be found in her practically limitless fields of marketable coal. Coal was mined by hunters, trappers and traders of the Hudson Bay Company as early as 1842.

The different qualities of coal in the State thus far found and the location of the many fields, now either producing the fuel or being rapidly developed, range from a rich bituminous coking coal to brown lignites. The bituminous coal ranks high as a heat producer. The richer bituminous coal, found principally in Pierce county, contains a very large percentage of volatile hydro-carbon, which dispenses rapidly when exposed to heat, making a grade of coke equal to that produced in the Connellsville district in Pennsylvania.

Recent government tests demonstrate that the steam coals of Washington compare favorably with the Vancouver island coals, long accepted as the standard for this coast. These government tests have also proven that at present prices the Washington coal is much more economical than that of Vancouver island, with which it is brought most into competition. The slight superiority of the latter is more than offset by the difference in prices. The evaporation tests of the War Department place the equivalent of Comox coal at 2147, and that of the South Prairie coal, which stood the highest test, at 2299.

The government evaporating tests, because of the eminently practical manner of making the trials, probably furnish the best gauge for judging the steam value of Washington coals.

Twelve tons of coal are necessary to make one of these tests. This coal is given a regular boiler trial, under a scientific arrangement. The exact amount of water evaporated by the coal is determined and is compared with the similar evaporation produced by a cord of dry oak wood. These evaporation tests have been in progress for years, and are reliable.

Results of government tests, for the purpose of showing the comparative value of the Washington products, have been taken from the records of the War Department, and are given below. (All coals given are bituminous):

Name and location of mine.	*Equivalence.*
Albion Cardiff, Wales	1542
Lairds Welsh Hartley, Wales	1735
Australian Brown, Australia	1646
Hetton, Australia	1847
Scotch Splint, Scotland	2148
Mount Diablo, California	2592
Coos Bay, Oregon	2626
BRITISH COLUMBIA.	
Comox, Union district	2147
Nanaimo, Vancouver island	2212
Dunsmuir, Wellington	2085
East Wellington, Departure bay	2485
Galt, Lethbridge, N. W. T.	3344
New Wellington, Departure bay	2983
WASHINGTON.	
Bellingham bay, Skagit and Whatcom counties	2641
Black Diamond, King county	3170
Black Diamond, vein No. 14, King county	3267
Bryant, King county	3461
Bucoda, Thurston county	3403
Cle Elum, Kittitas county	2681
Franklin, McKay vein, King county	2806
Franklin, Gem, King county	2919
Issaquah, King county	2837
Newcastle, King county	3582
Roslyn, Kittitas county	2486
South Prairie, Pierce county	2299

Coal Output for 1900.

The amount of coal mined, all grades, 2,418,034 short tons. Average value per ton at mine, $1.83, amounting in value to $4,425,002.22. Number of men employed, 4,338, working 260 days. Amount of coal produced by each employe per day, 2.18 tons. Average wages of all employes, $2.47 per day. Amount paid employes for wages, $2,721,643.60.

Average cost to place product on railroad car at mine is about $1.27 per ton.

Output of Coal for 1900 by Counties.

Kittitas county produced at the mines of the Northwest Improvement Company at Roslyn 867,204 tons and employed 1,090 men. The average wages of all employes was $72 per month. The total amount paid to employes was $78,480 per month, and amount paid in wages during the year was $941,760.

King county, with fourteen mines, produced 853,295 tons of coal. Of this amount, 438,542 tons were produced by the mines of the Pacific Coast Company; 1,996 men were employed, working 260 days each in the year, at an average wage of $2.47 per day; $1,281,631.20 was paid out in wages during the year.

Pierce county produced from six mines 595,605 tons of coal; 1,078 men were employed.

Skagit and Whatcom counties produced 56,830 tons, and employed 81 men.

The following table shows the wages paid at the mines for the different classes of work:

Inside Employes.

Mine foreman	$2.75 to $5.50
Fire boss	2.75 to 3.50
Stable boss	2.10 to 2.90
Driver	2.00 to 2.50
Trapper	75 to 1.75
Timber men	1.85 to 2.75
Trackmen	2.25 to 3.00
Cagers	2.00 to 2.70
Starters	2.10 to 2.75
Buckers	2.10 to 2.50
Loaders	1.00 to 2.50
Laborers	2.10 to 2.70
Engineers	2 00 to 8.00
Firemen	2.00 to 2.50

Outside Employes.

Carpenter	$2.00 to $3.50
Foreman	2.00 to 4.00
Weigh boss	2.00 to 3.00
Blacksmith	1.75 to 3.50
Bunkermen	75 to 2.75
Electricians	3.00 to 4.00
Machinists	2.50 to 4.00
Laborers	1.75 to 2.25

When employed by the day, miners are paid from $2.25 to $3.00 per day, and make on contract work from $2.50 to $4.00 per day.

Coal Fields of the State.

Coal is found in more or less quantity and of various qualities in twenty-one out of the thirty-six counties of the State, viz., Pierce, King, Kittitas, Whatcom, Skagit, Snohomish, Thurston, Cowlitz, Chehalis, Lewis, Jefferson, Clallam, Okanogan, Stevens, Wahkiakum, Pacific, Yakima, Klickitat, Spokane, Whitman and Clarke counties.

The fields that are the most extensive and productive at the present time are in Kittitas, King and Pierce counties. The Roslyn field in Kittitas county is the most extensive unbroken field in the State. The Roslyn vein is five feet of clean bituminous coal, first-class in quality for steaming and domestic purposes, with sandstone top and bottom; strike, northwest and southeast, dipping from thirteen to twenty-six degrees southwest. There is also another vein in this field in the Cle Elum valley, which is about four feet of clean coal. This vein lies about two hundred and fifty feet under the surface at Cle Elum, dipping to the southwest.

The Roslyn vein was opened in 1886 by the Northern Pacific Coal Company, now the Northwestern Improvement Company. Their output in 1900 was 867,204 tons. The total amount of coal produced by this mine since opening is about five millions of tons, from an area of about one thousand acres. The amount of available coal in the Roslyn field proper, at a conservative estimate, is forty-seven millions of tons. This estimate is on the holdings of the Northwestern Improvement Company, consisting of ten thousand acres.

In addition to this, there is very little doubt but that the Roslyn vein extends under the entire Cle Elum valley, at a depth of eleven hundred to fifteen hundred feet. This being the case, this field is practically inexhaustible, and will furnish coal for generations to come.

The Fields of Puget Sound Coal Basin.

The Puget Sound Coal Basin covers an area of about seven hundred and fifty square miles. There are several distinct districts or fields within this basin. The character of coal differs in each separate field. It varies in quality from a lignite to rich bituminous coking coals.

Their representative analyses vary as follows:

Lignites moisture	8 to 12 per cent.
Volatile hydro-carbons	35 to 45 per cent.
Fixed carbon	30 to 45 per cent.

The bituminous lignites, or steam coals, in which the moisture is reduced to 5 per cent. or less, and the fixed carbons range from 40 to 50 per cent., will evaporate seven pounds of water to one pound of coal. The bituminous coking coals are fairly represented as follows:

Moisture	1 to 3 per cent.
Volatile hydro-carbons	25 to 35 per cent.
Fixed carbon	50 to 60 per cent.

These coals make a variety of coke equal to that of the famous Connellsville variety.

The lignites are hard; bituminous lignites, softer, but firm. The bituminous coking coals are soft, and require washing.

Wilkeson-Carbonado District.

This district produces our bituminous coking and gas coals. It lies southeast of Puget Sound. The mines which are developed are in the northern part of the field, and are about thirty miles from tidewater. The southern part of the field, which extends to the foothills of the Cascade mountains, has been prospected for some years with good results, and is being developed at the present time.

The formation of this district lies in a series of folds.

This field has an area of about thirty-six square miles. While a few mines have been worked for sixteen or eighteen years, the district is still in its first stage of development.

Newcastle-Gilman District.

This district is situated about fifteen miles southeast of Seattle, on the east side of Lake Washington. It is reached by the Seattle & International and the Columbia & Puget Sound Railroads. The Issaquah measures are on the northeast spur of Squak mountain, and extend from east to west to the Newcastle hills.

The Coal Creek and Newcastle mines are about six miles northwest of Issaquah. This district produces a fine grade of steam and domestic coal.

The Renton-Cedar River District.

This district lies about eleven miles southeast of Seattle, and is reached by the Northern Pacific Railway and the Columbia

MILL AND CONCENTRATOR AT REPUBLIC MINE, REPUBLIC, WASH.

& Puget Sound Railroad. The coal measures are exposed for a number of miles along the Cedar river, but are very little worked at the present time.

Green River District.

This district is in King county and about thirty miles southeast of Seattle, on the Columbia & Puget Sound Railroad. The coal formation is exposed along the Green river through township 21, ranges 6 and 7 east. The noted McKay basin is in this district.

The McKay basin is one of the best in the state. It is a high grade steam and domestic coal; requires no washing or picking.

There is also a large area of valuable coal measures in Lewis county, lying near Centralia. This field has been quite extensively prospected and will be developed to a considerable extent in the near future. Lignite of good quality is found in this field.

Another field lies along the Nesqually river, undeveloped as yet, but shows a high grade of gas and coking coal similar to that of the Wilkeson field. In fact this district is a part of the Wilkeson-Carbonado coal field.

In conclusion would say: That the coal fields of Washington, notwithstanding having been worked for a score of years, and having produced millions of tons of coal, are yet in their first stage of development. There having been no deep prospecting done up to the present time, the measures of coal that are being worked were developed from exposures on the surface. When it becomes necessary for deeper prospecting, there will, without doubt, be measures of coal found that are now unknown. It can certainly be said that our present coal fields are practically inexhaustible.

METAL MINES.

Mining for the precious metals in Washington has been so limited in the way of development, and our sources of information in this particular are so few, that our treatment of the subject must be somewhat brief and incomplete.

The precious metals are found in various portions of the State and sufficient development has been carried on to demonstrate and prove the existence of mines of great value. The fact that the larger part of the discoveries of the State are of a refractory character of ore, and to a certain extent low grade,

besides being somewhat remote from transportation lines, accounts for the apparent slowness of development. But with the removal of this difficulty and the introduction of the modern methods of reducing ores, mining in this State will become more profitable and the large ledges, that are known to exist, will develop into mines of great value.

The mineral belts of the State cover a large area. From the Blue mountain district in the southeastern part of the State, to the northern counties, from Stevens on the east to Whatcom on the west, and in all of the Cascade range of mountains, from the Columbia river on the south to the British Columbia line, the precious metals are found.

Ledges carrying gold and silver have been discovered in the Blue mountain district, but no mines have yet been developed to such an extent as to prove their value, there being no producing mines.

Stevens county lies directly north of Spokane and is traversed by the Spokane Falls & Northern Railroad, which affords many of its mining camps good shipping facilities. Bossburg is the chief mining town of the county. In the districts surrounding the same are the Pierre Lake, Toulou Mountain, Bruce Creek, and Young America mines. In the Pierre Lake camp are many mines showing high values in copper and gold, among which are the Little Giant, Little Jem, Sunday Morning, and others. Considerable development work has been done on the Scotia and other claims on Toulou mountain; the veins being heavily capped with iron, and carrying chalco-pyrite ores. The same are said to carry high values, and the prospect for large bodies of ore is most promising. The development work on Jumbo mountain shows the same character of ore and the same general results have been obtained.

Near Bossburg is the Bonanza mine, one of the heaviest shippers in the State. The shipments have aggregated 1,000 tons per month, and the mine is now open to a depth of 400 feet, carrying a low grade of silver lead ore, which is in demand by the smelters for fluxing purposes. The Young America mine is also a permanent shipper.

The Old Dominion mine, near Colville, is another rich silver mine. Nine miles west of Valley station is a remarkable deposit of green onyx and marble. This material is valuable for build-

ing purposes. It is said to be of the finest quality, and the blocks quarried are limited in size only by the carrying capacity of the wagons which transport them to the railroad.

Another rich silver lead mine is the Cleveland, which is said to run from 25 to 60 ounces of silver and 20 to 60 per cent. in lead, the ore becoming richer as depth is attained.

There are also silver lead mines found on the Pend d'Oreille river in the Metalline mining district, where considerable development work has been done, but the expense of shipping, owing to the lack of proper facilities, has been such as to retard development of this camp.

Ferry county lies west of Stevens, having been carved out of that county by the legislature of 1899. Republic is the county seat of the county, and is the center of a remarkably rich mining district. Prior to the beginning of 1898 there had been but little done in the Republic mining camp, and its wonderful wealth was unknown. Up to that time some surface work had been done on the Republic mine, some tunneling on the Mountain Lion, and some short tunnels and shafts on other promising claims. The mine which has made the Republic camp famous, is the one which gave it and the city above referred to their names. The man who staked it at the time did not have a high opinion of its value, its hungry looking quartz having an unpromising appearance, but upon development it has produced sufficient gold to pay expenses, including extensive improvements, and handsome dividends. The mine has a large concentrator and makes regular shipments to the smelters at Northport and Rossland. It is simply an illustration of the fact that the full value of mines cannot be told by surface indications, but require money and toil for their development.

In and about Republic it is said that the quantity of gold and copper ore is practically without limit. There is a white porphry belt stretching from the Golden Harvest mine on the south to the Tom Thumb on the north, an area of six miles long and two miles wide, located solid with mineral claims, which are in all stages of development from the prospect hole to the shaft seven hundred feet in depth. The veins running through this white porphry belt are numerous, wide and extensive; the ores are white, being composed mainly of calspar, caolinite and quartz. They average about $13.00 in gold and $5.00 in silver per ton.

To the east of Republic about six miles is the California group of mines. The ores are a high grade gold, associated with silver, copper and lead. A large shaft house, with power plant, has been erected, and seven hundred feet of main shaft, besides a number of stopes, have been run. Thirty men are constantly employed, and a sufficient number of shipments have been made to the smelters at Northport and Rossland to demonstrate the permanency and value of the group.

To the west and northwest from Republic from six to twelve miles lie Sheridan Camp, Empire Camp and the Wauconda Camp, with many promising prospects. To the northeast of Republic ten miles, in the low foothills, lie copper, gold and silver ore bodies of wonderful size. These enormous veins lie under iron cappings, and recently the prospectors have been digging into the same and they have discovered with delight that they will pan gold. Several companies have been quietly working running shafts, which have exposed numerous bodies of ore. The ore carries a high percentage of iron, with manganese and lime, and with good values in gold, silver and copper. They make a perfect flux for the ores of the white porphry belt above referred to. The ores of the Republic basin, when mixed together, constitute an ideal smelting proposition. The country rock in this section is very easy to drill and blast, enabling the work to be done at a minimum cost. The Republic Mining Company drove its No. 4 tunnel a distance of 2,200 feet with one machine drill at the rate of 12 feet per day, coming within seven feet of beating the world's record for fast work.

In the southern part of the county, in the Sans Poil district, are said to be rich discoveries, upon which considerable work is progressing, and which will probably develop a valuable mining camp, but upon which we have no data or information for a further description of the same.

In the northeastern part of the county are found the celebrated La Fleur mines, situated on the mountain of that name, the Lone Star, Washington and other valuable mines of promise.

Okanogan county, to the west of Ferry, constitutes an immense mineral bearing area, but being remote from transportation, has as yet been but little prospected. Its great value as a mining country is little known. The county is divided into four zones, running east and west. Beginning at the south, high

grade silver ore predominates. North of this is a copper belt, which includes the Methow country, where some large copper-gold veins are being opened. Still further north is the free gold belt, in which Loomis and Oro are situated, and still further north is another copper belt, which laps over into British Columbia. All of these belts carry gold.

Palmer mountain and the immediate vicinity are best known on account of the large number of veins carrying free gold. The most extensive operations are being carried on by the Palmer Mountain Tunnel Company, which is driving a tunnel that is to be several thousand feet in length, and it is reported that in driving 2,000 feet, twelve veins have been cross-cut. This company is pushing the work, and while driving their tunnel is experimenting in the best methods of treating the various ores encountered, and it is expected that this will develop into one of the greatest mining companies known.

The Golden Zone, on Mount Chappaca, has 1,800 feet of tunnels, and as soon as transportation facilities are afforded will become a shipper and dividend payer, the ores running high in free gold.

There are also valuable mines found in the vicinity of Oro, on which development work is progressing, the ore being of a high grade, carrying values from $20.00 to $120.00 in gold. The "Q. S." mine is said to crop fully three hundred feet and from four to seven thousand feet long, and assays high in gold and copper. A prospecting tunnel is in several hundred feet, tapping the vein at a depth of 600 feet.

On the Methow work has been retarded by lack of transportation facilities, but there are said to have been remarkable claims opened. In the ores of this district are copper — native copper having been taken from the Peoria. Also in the Lilly mine a strike of gold ore of high grade in a well defined vein is reported.

Near the head of the Twisp river are said to exist fine veins of free milling gold ore, and some promising properties are being developed. With the opening of transportation facilities, which are promised by the construction of the branch of the Great Northern road elsewhere mentioned, no doubt the districts of Okanogan county will be brought into prominence, all of which being so thoroughly mineralized, offer tempting opportunities to men with capital and courage.

Chelan county lies to the south of Okanogan, having been carved out of that county and Kittitas county by the legislature of 1899. An impression had heretofore prevailed that the Chelan mines were inaccessible, but with transportation on the Columbia river and steamers on Lake Chelan, these mines are found to be more accessible than those in some other parts of the State.

Lake Chelan has five distinct camps worthy of reference: The Klondike, Meadow Creek, Railroad Creek, Bridge Creek, and Horseshoe Basin.

Klondike camp lies to the north of Lake Chelan about eight miles. The ores are copper and gold bearing, the veins running from the top of the range to the Methow valley.

Meadow Creek camp is also on the south side of the lake, to the northwest of Klondike camp, the ores here also carrying gold and copper, with some veins of rich galena. This camp is on the shore of the lake and is thus afforded first-class shipping facilities.

Railroad creek is to the south of the lake, its ores being similar to those of Meadow creek. In this district is situated the Holden group of mines, owned by the Chelan Transportation and Smelting Company. The principal ledge in this group is over one hundred feet wide. Average values of the same, taken clear across the vein, run about ten dollars in gold and copper. The company has now under course of construction twelve miles of railroad from Lake Chelan to the mines, the grade being completed and ready for the iron, which it is expected will soon be laid, and the road be in operation. It is their intention to build and operate a line from the lower end of the lake to the Columbia river, the same to be run by electricity. At this point a two hundred ton smelter is to be erected to treat the ores from their mine and the other mines of the vicinity. This plant will be increased to five hundred tons capacity as fast as ore can be procured for the same.

This company also has in contemplation the construction of a railroad from Lake Chelan up the Methow to the rich mining district on the Twisp, and with the completion of its various enterprises it will be one of the greatest factors in the development of the mining interests of this section of country, as well as the owner of what is destined to be one of the greatest mines on record.

Bridge Creek camp is to the north, and is remarkable for silver. Some of the claims are galena leads, carrying gold and silver, the latter of which largely predominates.

The best known camp in this district is the Horseshoe Basin, on the headwaters of the Stehekin river, near Skagit or Cascade pass. In this camp is the Blue Devil, the Black Warrior and other claims. There are numerous veins in this district, which saddle the Cascade divide. The veins run high in silver and lead, assays running 80 to 90 ounces of silver and 75 per cent. lead. All of these camps will be materially aided by the construction of railroads affording transportation facilities, and the prospects in this regard seem promising at the present time.

Kittitas county has gold mines, both quartz and placer. The placer mines in the Swauk district have produced many thousands of dollars, having been operated in a crude manner since 1872; single nuggets having been found at different times to the value of several hundred dollars. The richer portions of this district are what are known as "deep diggings," the placer gold being found on the bed rock, which has to be reached by shafts and drifting, and owing to the limited means of those who in the past have operated the same, only a small percentage of these valuable grounds has been worked. A large company now have a first class hydraulic plant in operation in this district. Quartz mines are also to be found here, but this being a placer camp, but little has been done with the same as yet. However, recently their value and richness has been discovered and the Gold Leaf Mining and Milling Company have erected a ten stamp mill which is now complete and ready for operations. They are said to have valuable free milling gold quartz, and the mill is under the management of Mr. J. J. Reilly, an experienced gold miner, so that the success of the enterprise seems assured, and will no doubt result in great benefit to the district in opening up a rich quartz camp heretofore unknown.

The Fish Lake and Cle Elum camps to the northwest, are flourishing camps, and are said to contain valuable copper deposits. In the Peshastin district a stamp mill has been in successful operation for several years.

In the districts further south in Pierce, Lewis and Cowlitz counties there are said to be ledges carrying high grade ores,

but owing to the lack of transportation facilities development has been retarded, and but little can be said as to their value.

WHATCOM COUNTY.— There are two mining districts in Whatcom county, viz., the Mount Baker district, and the Slate Creek district.

In the Mount Baker district, free milling quartz has been discovered, which is alleged to be of great value, assays running very high. The best known mine is the Post-Lambert, and it is expected that the same will be extensively developed during the coming year.

The Slate Creek district, lying near the summit of the Cascade mountains, in the eastern portion of Whatcom county, is supposed to be one of the richest mining camps in the state. In this district is located the Eureka, upon which C. B. Lane, the San Francisco mining magnate, has erected a ten stamp mill which is now in operation, and if reports can be relied on, it will prove to be one of the most valuable mines in the country. Also, near the Eureka is the Mammoth mine, upon which is located a five stamp mill, and the owners expect to erect fifteen stamps more during the coming season. The ores of this district are of a very high grade, carrying sufficient free gold to pay handsome dividends. These mines are said to carry tellurium, and assays from the same have run up into the thousands of dollars per ton in value.

SKAGIT COUNTY.— In the eastern portions of Skagit county mineral deposits are also found very similar to those in other portions of the Cascade mountains, and it is said that a large belt of silver lead ores is located in this county, probably being a westward extension of the mineral zone from the Horseshoe Basin in Chelan county.

SNOHOMISH COUNTY.— The copper belt that extends from the northern boundary line to Mount St. Helens crosses Snohomish county, and the prospecting and developing thus far gives promise of great and profitable mines. In the northeastern portion of the county there is a large area of almost unprospected territory, which will undoubtedly develop rich mines. On the western edge of this section, and about fifty miles from Everett, is the town of Darrington. The Northern Pacific Railway Company has recently completed a branch line into this place, and the new

THE PUGET SOUND REDUCTION COMPANY'S SMELTER, EVERETT, WASH.

road will enable the miners of Gold mountain and White Horse mountain to ship ores to Everett for treatment. On Gold mountain the Forest mine, owned by Seattle parties, has the greatest amount of development work done, and as soon as the necessary amount of machinery is placed the mine will have no difficulty in breaking and handling 100 tons of ore a day.

The Blue Bird Mining and Smelting Company have opened a fine vein of ore of good grade, and now that supplies can be easily obtained, the company will continue their development work and commence shipment.

The Burns Mining company will continue the development work on their property and expect to make it a shipper this season. Several other companies in this section will improve their properties during the present year with every prospect of good returns. The prevailing ore in this camp is copper, carrying in addition both gold and silver values. While considerable shipping ore is found, still the very large amounts of low grade ores present will require the use of some kind of concentrating machinery.

To the southeast of Darrington is Monte Cristo. Here the Monte Cristo Mining Company has been operating for eight years a concentrator capable of handling 250 tons of crude ore per day, and the company is shipping fifty tons of the concentrates per day to the Everett smelter, where the ore is first treated for the arsenic contained and afterward smelted. The Penn Mining Company, of Goat Lake, have been developing their property for a number of years and now only wait transportation facilities to make their mine a large shipper. Considerable prospecting and development work is doing in the neighborhood of Monte Cristo, and now that the Everett & Monte Cristo Railroad is rebuilt mining will be resumed with renewed activity.

At Silverton, about fifteen miles west of Monte Cristo, work is being carried on extensively. The Copper-Independent Consolidated Mining Company, recently formed by Boston capital, is working the old Independent mine, and the property will be an extensive producer, trial shipments made prior to the washout of the railroad having proved satisfactory. A concentrator may be erected this season to treat the lower grades of ore on this property. The St. Louis made trial shipments three years ago

and will this season resume. Other properties are working with new vigor and Silverton promises well for this season.

The "45" mine in the Sultan basin has a large force of men at work remodeling the long tram-way connecting the mine with the railroad, and when this work is completed extensive shipments will be made, as the property is well developed, with large ore dumps and reserves. Shipments of a very satisfactory grade have been made from this property. In Sultan basin a number of properties are being developed, and on the Sultan river a company is putting in hydraulics to wash some placer ground.

At Index, in the southern part of the county, much work is being done. The Wilbur, Index-Independent and Sunset have made shipments of ore to the smelter at Everett. The Nonpareil, Monte Carlo, Ethel, Ontario and other properties above Index, are doing development work with prospects of success. The Copper Bell, below Index, has recently been sold, and the purchasers are expecting to place in operation compressers, concentrators, etc., which will undoubtedly make this a shipping mine. In fact, it is simply a matter of time and money to make all of the mines mentioned, and others in the district, dividend payers.

To the northeastward of Index are the Silver Creek and Troublesome districts, where many promising discoveries have been made and a great deal of development work has been carried on.

Much of the ore in Snohomish county is low in grade, but with the large bodies of it that exist there is no reason why large dividend payers should not be made. Work is being pushed in every mining camp in the county and the mining prospects are very bright.

King County.—To the southeast of the Index district, in King county, lie the Salmon Basin, Buena Vista, Money Creek and Miller River districts. In the Salmon Basin is located the Golden Tunnell, upon which several thousand dollars have been spent in erecting a mill and tramway, also the Golconda and other promising properties. This is a gold district. On Money Creek is located the Apex, upon which several hundred feet of prospecting work has been done, and several carloads of high grade ore shipped to the smelter upon which handsome returns were received.

In the Miller River district is situated the Great Republic property upon which a fifty ton concentrator is being constructed. These mines carry gold and copper. The Cleopatra, Aces Up and Sunday mining claims, belonging to the Mining and Cooperative Syndicate, are also located in this district. All of which have the promise of making valuable mines. These districts are located near the Great Northern Railroad, over which the ores can be transported to the Everett and Tacoma smelters. Low grade ores can on this account be profitably mined.

THE OLYMPIC MOUNTAINS.—In Jefferson and Clallam counties are said to be situated valuable ore deposits, but as development has not been carried on sufficiently to demonstrate their value, we have no information or data upon which to base an extended description of the same.

The history of mining has attested to the fact that the great dividend paying mines are usually those carrying low grade ores, but having large bodies of the same, as owing to the new methods of treatment and means of handling ores, quantity is what brings the best results. The State of Washington abounds in ledges of this character, and with the continued improvement in smelting processes and the addition of transportation facilities, there can be no doubt that this will become a leading industry, and within the next few years we confidently believe that it will be known as one of the great mining states of the country.

STATE GEOLOGICAL SURVEY.

The board of geological survey is composed of the Governor, Lieutenant Governor, State Treasurer, president of the University of Washington, and president of the Washington Agricultural College.

Prof. Henry Landes, professor of mineralogy and geology of the State University, has been appointed State Geologist, and together with a corps of assistants, is now actually engaged in the field work of the board. The object of this survey is to examine the economic products of the State, viz., gold, silver, copper, iron, and lead ores, building stone, clay, coal, and all mineral substances of value; the examination and classification of the soils; investigation and report upon water supply; examination and report upon different building material; examina-

tion of the different physical features of the State; preparation of special economic and geological maps to illustrate the resources of the State; the preparation of special reports with necessary illustrations and maps and the consideration of other scientific and economic questions. The completion of this work and the publication of the report will prove another source of great benefit to the people of the State, and those desiring reliable and accurate information as to our resources and capabilities.

THE FISHING INDUSTRY.

The fishing industry of the State of Washington must be considered as one of her principal resources, and as the fisheries on the New England coast have for years been a source of great wealth, giving employment to thousands of fishermen and never failing in importance, so in recent years has been recognized the value and importance of the fisheries of the State of Washington and the Pacific coast. Until lately the largest packing combination has been the Alaska Packing Association, with headquarters at San Francisco, but now with the better means of transportation to the markets of the world, Puget Sound has become the head center of the industry on the coast, and can boast the largest cannery in the world.

The growth of the fishing industry in the past few years has been remarkable, there being a vast increase in the amount of capital invested, labor employed and in the output. No other state has shown such a development, and no other territory, except possibly Alaska, has the possibility of such a future growth.

In considering the question of fisheries we may safely state that Puget Sound will continue to be the center of the industry, since it is the natural distributing point for the present and future business of this state and Alaska.

There are many varieties of food fishes in the waters of the state and the ocean tributary to our ports, of which first to be mentioned and most predominant, is the salmon. There are a number of kinds of this valuable fish, among which are the Chinook (sock eye), blue back, steel head, silver side and others. These different varieties run at different times of the year, thus prolonging the season during which salmon may be taken and canned, cured or otherwise prepared for market.

It is only a few years since it was erroneously supposed that the Chinook was the only variety that was suitable for canning, but in recent years it has been fully demonstrated and is now settled that all of the species of this fish are valuable as a food product, prepared by the different methods now in vogue.

Owing to the various and complex methods employed in its different stages, it is difficult to give to those unfamiliar with the fishery business a clear idea of the remarkable progress that has already been made in the industry, especially on Puget Sound. The salmon "runs," or migrations to the spawning grounds, occur during the spring, summer and fall of each year. Enormous schools of salmon then enter Puget Sound from the Pacific ocean, and rush up the rivers and creeks to spawn somewhere near the heads of the freshwater streams. By natural propagation only about ten per cent. of the spawn develops into young salmon, but by artificial hatching there is a loss of but ten per cent. or less. Although salmon are the only fish extensively hatched under government direction and control in these waters, sturgeon, halibut, cod (several varieties), herring, anchovies, shad, flounders, perch, bass, sole and many other varieties are found here in large quantities, as well as oysters, clams, crabs and other shell fish.

Salmon are caught for the canneries, fresh and cured fish establishments on Puget Sound, chiefly in traps and gill nets. The fish trap is a mystifying arrangement of piles, wire webbing, nets and ropes. First a row of piles, from ten to fifteen feet apart, is driven, starting from the shore and diagonally from the incoming tide to deep water and on these piles and held down with rocks, wire netting is fastened. This forms the "lead" and under the law, must not be more than 2,500 feet long. At the outer end of this lead is the "pot," in deep water, but not deeper than 65 feet at low tide. Flanging the mouth of the "pot" are short rows of piles strung with netting in such a way that when the schools of fish strike the "lead" and follow it to deep water they are turned toward the mouth or "tunnel" of the "pot" by the flanges, called "hearts." The pot is suspended on piles like a huge bag or dip net about forty feet square. The mouth or "tunnel," more properly funnel, is a hole about ten feet in diameter, so arranged that fish once in are almost certain to remain there until the trap is full, when they are turned into an extra "pot" or yard of netting called a "spiller," and are loaded into scows to be taken to the canneries. This operation forms a wonderful spectacle, especially when from forty to seventy thousand salmon are in the pot. The scows are pushed into the pot, the fish are crowded into a pocket

and the trap steamer comes along with a great dip net about 12x12 feet in size, called the "brail," operated by steam, which dumps the fish into the scows by the hundreds.

Owing to these methods of catching fish in such large quantities, it became apparent to the people of the State that the waters would soon be depleted if some method was not adopted for the perpetuation of this valuable food fish. Consequently the Legislature of 1895, and subsequent legislatures, have wisely made appropriations and provided for the maintenance of fish hatcheries, until there are now under the supervision of the State Fish Commissioner and in successful operation, eighteen hatcheries and one eastern oyster experiment station. When to this number the two hatcheries operated by the federal government are added, it will be seen that this State leads every state in the Union in its practical provision for maintaining an abundant fish supply. The annual cost to the State of this important enterprise is about $65,000.

Fish hatcheries are established on creeks and rivers, usually and preferably where there is a small ice-cold stream, and a small lake or pool. The output of these hatcheries for the year 1900–01 was: For the Columbia river district, 16,635,500 young salmon; Puget Sound district, 37,673,000; Grays Harbor district, 2,122,000, and Willapa Harbor district, 726,000, making a total of 57,156,500. The extent and value of this output of the hatcheries is best appreciated by regarding the young salmon as matured fish, since they invariably return to their paternal waters after foraging in the deeps of the Pacific for from two and one-half to four years. Estimating that of this number forty million will return weighing on an average nine pounds each, it would mean over 180,000 tons of fish, amounting to the enormous sum of $10,000,000 annually for the raw product, which when cured would several times double this amount.

The capital invested in the fisheries of Washington for the year 1900 amounted to $4,362,470. There were 7,789 persons employed in the business, and their earnings aggregated $2,121,485. The value of the output for the year was $4,357,753, being more than $2,000,000 less than for the year 1899, when the total amounted to $6,389,142. This was due to the peculiarities of the fish and to the lack of a run of Chinook (sock eye) salmon, this fish only returning to the spawning grounds every two

years. To those unfamiliar with the fishing business these figures might appear extraordinary, but this does not by any means represent the value of the business to the state, as, in addition to the catching, handling and curing of the fish, there are great numbers of men constantly employed in other ways. It requires millions of feet of piling for fish traps and repairs, millions of cans, millions of cases, labels, etc., all of which is a source of revenue and wealth to the people of the state, giving employment to hundreds of men in addition to those directly engaged in catching, canning, curing and marketing the fish. Besides this each cannery operates in connection with its plant numerous steamboats, tug boats, launches, scows, etc. There are also ice plants, fertilizer works, can manufacturing establishments and box factories operated as kindred industries to that of the fisheries.

Though salmon is king, there are also found in the waters of Washington and the Pacific ocean tributary thereto sturgeon (deep sea bass); smelt, a delicious small fish that inhabits both fresh and salt waters; halibut and cod, both of which are well known, herring, cat fish, tom cod, carp, salmon trout, brook and mountain trout, and several other species of lesser commercial importance. Shad were planted on the Pacific coast some years ago by the United States Fish Commissioner, and the same have propagated and grown, now being caught in considerable quantities. While the shad is regarded on the Atlantic coast as a most valuable food fish, the superiority of our native fishes on this coast has caused the shad to suffer in comparison.

There are numerous fishing schooners engaged in fishing for halibut off the coast from Cape Flattery to the southern Alaska coast. These boats range in size from small sloops to schooners of from forty to eighty tons burden, carrying crews of from three to ten men. During the summer and fall months halibut fishing is carried on off the Washington coast near Cape Flattery, while during the winter and spring the operations are principally in northern waters, and the catch is brought to Puget Sound ports by the numerous steamers plying between them and the ports of Alaska. This business each year has shown a marked increase in volume, and the market has been extended, even invading the markets of the east, so long almost exclusively controlled by Boston and Gloucester. The catch is shipped by fast

FOUR MILLION DOLLARS GOLD FROM ALASKA, IN BOXES.

SALMON AT THE CANNERY.

freight to Boston, New York and other eastern points, where the fish are disposed of to retail dealers.

The fresh fish industry is not confined to shipments of halibut, but salmon and other food fishes are also shipped fresh to the eastern markets.

SHELL FISH.

Numerous varieties of shell fish abound in the waters of Washington, including oysters, clams, crabs, lobsters, shrimps and crawfish, all of which contribute to the importance and remunerativeness of the fish industry of the State. While crabs and lobsters are not found in great quantities, yet the Dungeness crabs are famous, wherever they have been introduced, for their flavor, and they form a toothsome dish when properly prepared. Clams are of several different kinds and are found in abundance. The canning of clams, and the manufacture of evaporated chowder and clam nectar are developing into important branches of the fish canning industry.

The most important, however, of all our shell fish is the oyster. The following facts, gleaned from the annual report of the State Fish Commissioner for the year 1900, show something of the importance of this industry. There were 445 persons employed in the business, whose earnings for the year amounted to $116,085. There were gathered and marketed 65,320 sacks, which, at $3.50 per sack, a price below the actual average value, amounted to about $228,620.

With reference to the oyster we quote from the report of Prof. R. W. Doane, formerly professor of zoology at the Washington Agricultural College and School of Science, now the expert in charge of the Washington State experimental station for the cultivation of eastern oysters, as published in the annual report of the State Fish Commissioner: "The cultivation of our native oyster (*Osterea luridia*), has for a number of years constituted one of the principal fishery industries of this state. Large areas, both on Puget Sound and Willapa Harbor, are now devoted to the profitable rearing and fattening of this luscious bivalve. The last few years, however, have seen an ever increasing demand for the larger oyster grown along the Atlantic coast and commonly known as the 'eastern oyster' (*Oster virginica*). To supply this demand hundreds of barrels and buckets of these oysters are shipped annually into our markets from the east and from San Francisco. As these shipments are

nearly all made by express, it is not difficult to understand why it is that those who wish to indulge in this luxury must be willing to pay fancy prices. For a number of years this condition existed in California, but ever since the completion of the overland railroad small 'seed oysters' have annually been planted in San Francisco bay, where they are allowed to remain until they reach a marketable size, when they are taken up and sold. Although the industry is controlled by but a few men, a large amount of capital is invested and thousands of dollars are realized each year from the sale of these oysters all along the Pacific coast."

The increasing demand on this coast for the eastern oyster has led to attempts to grow this species in our western waters. The experiments in San Francisco have shown that this oyster can be successfully grown there, but no attempt is made to catch the spat said to be produced there. A few experiments have already been made in the waters of the State of Washington. These may be divided into four groups: First, those made by private parties where only a few oysters were introduced. When these were properly cared for they have lived and are usually found to be in prime condition. Second, the experiment made by the United States Fish Commissioner by placing eighty-four barrels in the channel of Palux river at Bay Center, Willapa Harbor. These were destroyed by the river changing its channel and covering them up. Third, the experiment now being conducted by the Willapa Harbor Oyster Company. They have several car loads of young oysters on their beds that are in prime condition, and making a fine growth each season. Fourth, in addition to the foregoing, experiments have been made by the State Fish Commissioner and by the Agricultural College at Pullman in the propagation of the eastern oyster, and it has been demonstrated that it can be reproduced, if not naturally in our waters, by artificial means. Under the direction of the Fish Commissioner, extensive experiments are being made at Keyport, on Puget Sound. Prof. R. W. Doane, an eminent zoologist, is in charge of the station, and it is believed that his efforts will result in great benefit to the State, and that in a short time a way will be found whereby the eastern oyster will be made to reproduce itself in these waters, and thus add greatly to the industry.

There have been some shipments of these eastern oysters

from Willapa Harbor, which had grown to large size, fine flavor and were in every way superior to the imported oysters from the East. They are of the Blue Point variety, having been imported from the natural beds at Baltimore and the Atlantic coast. There are hundreds of acres of our tide lands susceptible of cultivation, and it is to be hoped that people interested in the business will furnish capital to duplicate over and over again the business which has been so successfully begun on Willapa Harbor. As an inducement to those who would wish to engage in this important industry, and to show the immense profits in the oyster business, we quote the following from the report of the Oyster Commissioner of the State of Maryland: "The industry is profitable almost beyond conception, and we are told on official authority that a crop of oysters valued at eight million dollars was raised in this way upon a French farm of 492 acres, while upon another French farm of 500 acres, 16,000,000 oysters were taken in six tides, although there were no oysters to be found when the farm was established five years before."

The State Fish Commissioner, from experiments, has made the following estimates with reference to the eastern oyster, the seed being shipped from the east and transplanted. The cost of the seed per barrel is $9.00 laid down in the waters of Puget Sound; one barrel contains 15,000 seed; in growing and maturing the loss would amount to 20 per cent. through transportation and other causes, leaving a total of 12,000 oysters which would mature in three years. For care and maintenance of oysters while growing, culling and preparing for market, the cost would not exceed on the average the sum of $11.00, or $20.00 for the total cost of 12,000 matured oysters, the present value of which is approximately the sum of $175.00. One acre of land can accommodate thirty-five barrels of seed oysters, from which any person can make their own calculations as to the fabulous returns that can be derived from this industry. The profits from the natural oyster beds which have been cultivated and cared for run into the hundreds of dollars per acre.

In the past there has been but little attention paid to oyster culture in this state, although some of the methods employed in the East are now in use here. The natural oyster beds of the state have been a source of large profit to the few engaged in the business and of late years the seeding and stocking of new beds

has become an important adjunct of the business. There is no business known, when the same is intelligently managed, which for the money invested and labor employed, will yield such large profits. The demands of our local markets are greater than we will be able to supply for many years to come. The climatic conditions are such that it would seem that the business should prosper and grow, our waters not being subjected to either of the extremes of climate, heat or cold, which are detrimental to the production of the oyster. Our oyster beds are so situated that they are protected from fierce gales and destructive storms. Whatever may become of the eastern oyster, which at present has every promise of being a success, our native oyster, while in size much smaller than the eastern oyster, has a flavor which is considered by many to be superior to those from the East, and it will always find a ready market.

The fish industry of the State is properly divided into four districts, and to give a fair estimate of its value and importance, we herewith give a general summary as taken from the State Commissioner's report for 1900, as follows:

CAPITAL EMPLOYED.

Columbia River district	$786,270 00
Puget Sound district	3,379,900 00
Willapa Harbor district	101,090 00
Grays Harbor district	95,210 00
Total	$4,362,470 00

NUMBER OF PERSONS EMPLOYED.

Columbia River district	1,693
Puget Sound district	5,319
Willapa Harbor district	480
Grays Harbor district	297
Total	7,789

EARNINGS OF LABOR EMPLOYED.

Columbia River district	$510,310 00
Puget Sound district	1,416,250 00
Willapa Harbor district	103,740 00
Grays Harbor district	91,185 00
Total	$2,121,485 00

VALUE OF OUTPUT.

Columbia River district	$891,514 00
Puget Sound district	3,105,221 00
Willapa Harbor district	202,370 00
Grays Harbor district	158,648 00
Total	$4,357,753 00

EDUCATION.

While Washington is one of the most western states and is regarded by many of the uninformed of the east as a sort of wilderness, it may be a matter of surprise and enlightenment to inform all such as will peruse this book, that our educational system is established on a permanent basis and is second only to a very few of the older states. It is a stistical fact that Washington stands near the top in freedom from illiteracy, only being surpassed in this regard by two or three states, and its citizens rank high in average education and intelligence. This is evidence not only of the fact that the East has been sending to us numbers of its best citizens, but it is also an evidence that the hardy pioneers who came here first and settled the country have been progressive and energetic in building right foundations for the continued intelligence, growth and prosperity of a future great state.

There is a comprehensive common school system, and there is no settlement of any importance to be found in the State that is not provided with a well equipped school maintained at public expense. In most of the towns there are high schools, and in nearly all of the villages there are graded schools of a high order, all of which are so organized, from the primary grades up, as to give this State as good an educational system, when time has been given to fully develop the same, as can be claimed by any state in the Union.

In addition to the common school system, there is the State University, State College of Agriculture and Applied Science, Agricultural Experiment Station, three normal schools, and School for Defective Youth.

We give below short articles descriptive of these different state institutions, showing their present equipment and enrollment, from which it will be seen in how generous a manner the State is making provision for the higher as well as the common school education of its youth.

STATE EDUCATIONAL INSTITUTIONS.

The University of Washington.

The State University, located at Seattle, was founded January 29, 1855, and opened its doors in the fall of 1862. It now has an attendance of over 600 students, and a faculty of about forty. Besides the opportunities in the college of liberal arts, or college proper, various professional courses have been established in the college of engineering, school of mines, school of pharmacy, school of law, and the graduate school. The standards of scholarship have been raised until they are now on a par with those of the oldest eastern colleges.

There are a dozen buildings connected with the State University, including structures for the purposes of administration, science, engineering, astronomy, assaying, law, gymnastics, and dormitory life. Some of the Greek letter societies also have fraternity houses of their own. The class rooms and laboratories are, in most instances, large and well equipped, and the library contains nearly 15,000 carefully selected books.

There are numerous associations among the students of the university. Probably the most important is the Student Assembly, which is an organization of the entire student body, and decides all questions arising among the students and relating to them, and controls all matters of general interest to the student community. There are also an oratorical association, four debating clubs, six scientific and three language societies, an association for the study of pedagogy, a dramatic club, an orchestra, a band, a men's and a ladies' glee club, a mandolin club, two athletic associations, three tennis clubs, branches of the Y. M. C. A. and the Y. W. C. A., and seven Greek letter chapters. The students also own and manage a co-operative book store.

For the first forty years of its existence the State University was situated on a ten-acre tract, which is now in the heart of Seattle, and three of the buildings on the site are still in use. One of these buildings, erected in 1861, was for many years the finest educational structure on the Pacific coast. During the early nineties the old quarters became very crowded, and in 1893 the State legislature provided a beautiful new site and sufficient money to build structures of a permanent character and adequate to the needs of a growing institution.

The new site is almost four miles from the center of Seattle

and can be reached by rail, street car, road or water. It comprises 355 acres of land between Lakes Union and Washington. The grounds have a water frontage on both lakes and are adorned by a natural growth of forest trees. They command a beautiful prospect. The Cascade mountain range to the east, the Olympic mountains to the west, majestic Mount Rainier to the south, and Mount Baker to the north, with the lakes, rivers, wonderful forests, and the deep blue waters of the ocean, combine to furnish an environment of healthfulness and inspiration. A skilled landscape artist has been engaged for some time to improve and develop the work already done by nature.

The State legislature of 1895 enacted a strict law prohibiting the sale of all intoxicating liquors within a radius of two miles of the new university grounds. This insures a college neighborhood free from the evils of the saloon.

The government of the university is vested in a board of regents, consisting of seven members appointed by the Governor for a term of six years. Hon. John P. Hoyt, ex-chief justice of Washington, is chairman of this board. The immediate government of the institution is in the hands of the faculty, which consists of the president and professors. Frank P. Graves, Ph. D., LL. D., is president of the university, and the faculty of each distinct school or college of the university has its own dean. Arthur R. Priest, A. M., is secretary, and William J. Meredith, A. M., is registrar of the university.

The university derives its support from the State and the lands granted by the federal government. There is no income from tuition fees. It is hoped, however, that before long a number of memorial scholarships and professorships will be established by persons of wealth. On March 14, 1901, the legislature appropriated $270,000 for the equipment and continuance of the State University during the next two years. With such support the future of the University of Washington is well assured.

Agricultural College and School of Science.

The State Agricultural College and School of Science is located at Pullman, Washington. Pullman is a town of two thousand inhabitants, located in the heart of the Palouse country in Whitman county. It is surrounded by one of the best agricultural regions in the State. The college was opened in 1892

and reorganized in September, 1893. It is the beneficiary of a gift of land from the national government, amounting in all to 190,000 acres. Under the provisions of the enabling act these lands cannot be sold for less than $10 an acre. The college will thus realize eventually not less than $2,000,000 for a permanent endowment for the institution. A considerable portion of the land is in the western part of the State and is covered with a magnificent growth of timber, and is worth at the present time from $30 to $50 per acre. The college is also the beneficiary of the so called "Morrill fund," amounting to $25,000 annually, and the "Hatch fund," amounting to $15,000 annually, which are paid from the United States treasury. In addition to this, it receives biennial appropriations from the State legislature. The last legislature appropriated $60,000 for maintenance for two years, besides as much more for betterment. The total enrollment of the college for the year ending June 20, 1901, was 638, including the summer school, or 475 without the summer school. The principal buildings of the college are, the administration building, 156x90 feet, four stories high; Science Hall, 170x90 feet, three stories high; Ferry Hall (the dormitory for boys), Stevens Hall (the girls' dormitory), College Hall, the mechanical and engineering building, the mining building, a chemistry building in process of erection; also an armory and gymnasium. In addition to these, there are the greenhouse, the veterinary hospital, the creamery and the farm buildings. The farm and campus embrace about 250 acres. The college maintains a three years' preparatory department and offers four years of collegiate work. The requirement for admission to the freshman class is the completion of the ordinary four years' high school course. The departments of instruction are (1) Department of Mathematics and Civil Engineering, including (*a*) mathematics, (*b*) civil engineering; (2) Department of Chemistry; (3) Department of Botany and Zoology; (4) Department of Agriculture; (5) Department of Horticulture; (6) Department of English Language and Literature; (7) Department of Economic Science and History; (8) Department of Mechanical Engineering, including (*a*) electrical engineering, (*b*) steam engineering, (*c*) water power development; (9) Department of Modern Languages, including (*a*) German, (*b*) French, (*c*) Spanish; (10) Department of Mining Engineering; (11) Department of Military

ADMINISTRATION BUILDING.

STEVENS HALL.

STATE AGRICULTURAL COLLEGE AND SCHOOL OF SCIENCE, PULLMAN, WASH.

Science and Tactics. In addition to these, the following schools are maintained: (1) School of Farming (two years), (2) School of Dairying (ten weeks), (3) School of Pharmacy (two years), (4) School of Veterinary Science (three years), (5) School of Business (one and two years), (6) School of Applied Steam and Electricity (one year), (7) Preparatory School (three years).

The equipment in the several departments is very large, and is unsurpassed in the Pacific Northwest. The faculty consists of forty professors and instructors. Ferry Hall, the dormitory for men, is capable of accommodating 180 students, and has a dining hall capable of accommodating over 200. The charge for room rental in this building is from $10.00 to $12.00 a semester. This includes a room equipped with furniture, heated by steam and lighted by electricity. The board is on the co-operative plan, and averages about $2.75 per week. Stevens Hall, the dormitory for women, accommodates about fifty young women. The prices of room rental and the method of board are the same as in Ferry Hall. The tuition is free to all citizens of the State of Washington. A fee of $10.00 per term is charged to non-residents. The faculty is made up of specialists selected with great care from all parts of the country. Among the institutions represented in the faculty are Harvard, the Massachusetts Institute of Technology, Columbia, Johns Hopkins, Cornell, the University of Michigan, the University of Indiana, the University of Illinois, the University of Missouri, the University of Nebraska, Stanford University, the University of Chicago and others. Among the most popular departments in the institution are the engineering courses, including civil engineering, mining engineering, mechanical and electrical engineering. Although the institution is as yet quite young, it has attained an enviable reputation in the Northwest for the thoroughness of its work and the high character of its curriculum. The location is one calculated to strengthen the health and physical development of students. The town of Pullman has good schools, six churches and opera house, is lighted by electricity, and owns its own water works. The water is supplied from artesian wells, and is of the best quality.

Enoch A. Bryan, a graduate of the Indiana University and Harvard University, has been president of the institution since September, 1893.

State Normal School at Cheney.

This was the first normal school established in Washington, and was opened to the students on October 5, 1890. During the past year it has enrolled 201 students and graduated from its advanced course eleven students, and from its elementary course twenty-seven students. It has a fine building, erected in 1895 at a cost of over $60,000. The last legislature gave the school all it asked for, $45,000; the only state institution that received all it asked for. During this vacation the trustees will spend $4,000 on repairs, plumbing, furniture and laboratories. The faculty will be increased to eleven, with a possibility of another being added in September. One thousand one hundred volumes have been added to the library this year, and two thousand more are expected to be added before next January.

The school is modestly trying to serve the State by training good teachers for the rural and village schools.

State Normal School at Ellensburg.

This institution was opened in September, 1891, with Benjamin F. Barge as principal, and three assistants. The second floor of the Ellensburg public school building was its first home. The training school consisted of one room of entrance and first grade children, under the guidance of Miss M. Rice. It was more of a model room for observation than a practice room for student teachers. During the first three years it was continued without home of its own, but grew in importance until the faculty numbered seven, and four rooms of the public school were utilized for a training school.

At the beginning of the fourth year the school had a home of its own, the State having erected a handsome and commodious structure for that purpose. P. A. Getz became principal, the faculty was increased to nine members, and a successful effort was made to establish a training school apart from the public school. The course of study was remodeled. The result was a weakening of academic work and a corresponding strengthening of the professional work. The school continued under this regime for four years.

In July of 1898, W. E. Wilson, the present incumbent, of the Rhode Island Normal School, was elected principal. Since that time the school has continued to develop. Perhaps the most

noticeable improvement has been in connection with the library, the training school and the establishment of a biological department.

The library is a good working one of its size, being well selected for a normal school. It numbers from three thousand to four thousand volumes.

The training school has grown until it now has a kindergarten department and all of the eight grades reaching to the high school, with eight rooms at its disposal and 175 pupils.

The biological department has been in operation for two years, is fairly well equipped, and is accomplishing good work.

The faculty now numbers eleven. They are well suited for their departments, and all work harmoniously together. The school has an enviable reputation. Its graduates are doing good work in nearly all sections of the State, and the prospects of its continued usefulness are very good.

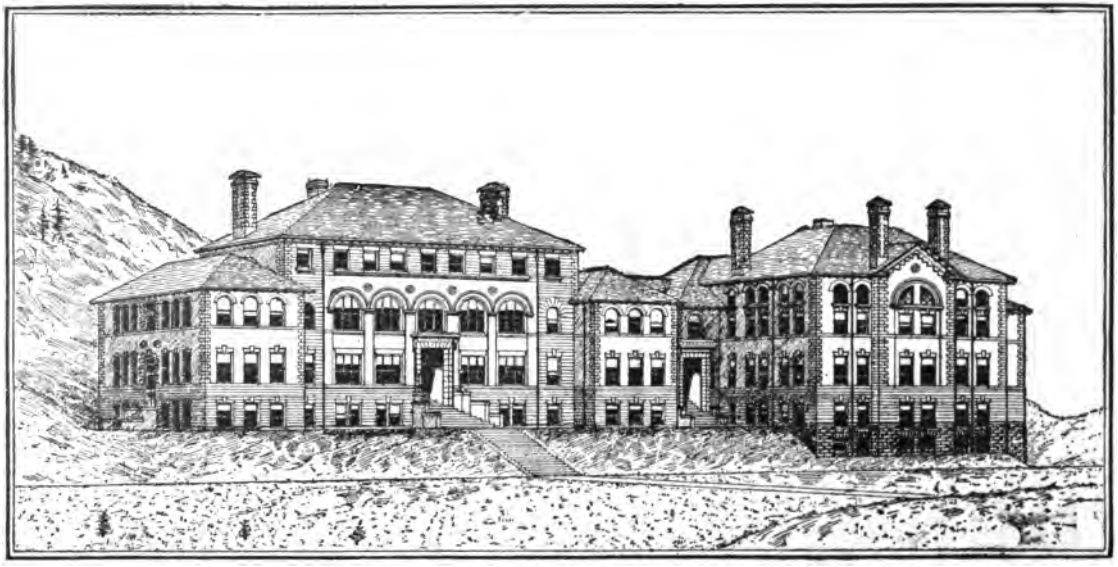
State Normal School at Whatcom.

The State Normal School is located midway between the cities of Whatcom and Fairhaven, and was formally opened in the year 1899. The annual enrollment reaches now nearly three hundred students. The school possesses good biological, chemical, physical and psychological laboratories. The library contains 3,500 volumes, and about fifteen hundred volumes are added annually. The reading room receives regularly each month more than seventy magazines and school journals.

The school has received from the citizens of the two cities a very valuable museum, which contains more than five thousand specimens. A training school is maintained, and each student is required to teach in this school before receiving a certificate or diploma from the institution.

The Normal School offers three regular courses of study — an elementary course of three years, an advanced course of two years, and a graduate course of one year.

The original building is a large, massive stone and brick structure containing forty rooms. At the last session of the State legislature the school was given the sum of $48,000 for the erection and equipment of a large annex to the present building. When completed, the entire structure will be 256 feet in length, and will provide a total of seventy rooms for daily use. The



STATE NORMAL SCHOOL, WHATCOM, WASH

building will be one of the best educational structures on the Pacific Coast.

The faculty is composed of thoroughly trained men and women, and contains fifteen members. No tuition is collected from the students, and all text books are provided by the institution. The school is maintained entirely from direct appropriations made by the State legislature at its biennial sessions. The last maintenance appropriation was $42,500 for the present term of two years.

State School for Defective Youth.

This institution is located at Vancouver, Wash., and while many people have erroneously considered it in the sense of an asylum or resort, it is really a school of the greatest importance. It is properly divided into three branches, viz., for the deaf, the blind, and the feeble minded. The condition of the deaf, who lived prior to the establishment of such schools without mental development, was most pitiable; but, as a result of just such schools as we have in our own State, the condition of this class has been greatly benefited, and among their number we find many competent and successful business men and women, and those trained for all vocations of life. Also in the case of the unfortunate blind, many of whom we have in our country, we find that their misfortune bears less heavily upon them when they have had the benefit of such a school and proper training. The deaf are educated by the sense of sight, and the blind are taught through the sense of touch and hearing, and by this education they are enabled to take care of themselves and contribute to their own happiness and general welfare.

For the feeble minded there is not so much of promise, and their treatment partakes of a physical rather than an intellectual nature. However, such improvement as they are able to attain by careful training, be it ever so slight, proves beneficial, and we can say for the institution, which is under the management of Prof. James Watson, the director, that each branch has been well managed, and it is an institution of great value to the State.

PRIVATE EDUCATIONAL INSTITUTIONS.

In addition to the state institutions, there are numerous colleges, academies and private schools in the different parts of the State, reference to many of which will be found in the descrip-

tive articles by counties, published in this report. These institutions are for the most part sectarian in character, or at least stand for Christian education, and are supported by the various denominations represented in the State. The facts concerning the same will be of interest to those wishing information as to our State, and while we are not able to give descriptions of each one in detail, we have been supplied with a brief article descriptive of Whitman College, located at Walla Walla, which is a wide awake institution. It has shown marvelous growth with the past few years, and is justly the pride of that little city.

We also publish a brief descriptive article of Whitworth College, located at Tacoma, of which that city is also justly proud, and no doubt the same will grow in importance and become a valuable institution. The former is under the auspices of the Congregational denomination and the latter of the Presbyterian Church.

Those who wish to send their children to such institutions rather than the state universities and schools can be supplied, there being a Baptist colege located at Colfax, a Methodist university at Tacoma, and numerous schools of the Catholic denomination located in the various portions of the State.

Whitman College, Walla Walla.

Whitman College, located at Walla Walla, was founded in 1859 by Rev. Cushing Eells, in memory of Marcus Whitman, M. D. The institution began its existence as a seminary, and continued as such with varying success until the year 1883, when it was organized as a college, under the guidance of Dr. A. J. Anderson.

The most remarkable development in the life of the college has taken place in the past seven years, during which time Rev. Stephen B. L. Penrose has been president. As an illustration of the growth of the college, the following statement from the president's report for 1901 may be presented as showing increase in enrollment: 1894-5, 60; 1895-6, 112; 1896-7, 168; 1897-8, 209; 1898-9, 238; 1899-00, 243; 1900-01, 293.

The college grounds comprise twenty-three and one-half acres, upon which are located eight buildings. The largest building is the Whitman Memorial, which was erected in 1899, and cost $50,000. Its erection was made possible by the gener-

osity of Dr. D. K. Pearsons, of Chicago, who has just made another offer of $50,000 for additional endowment on condition that $25,000 be raised by the college for a young women's dormitory. The total value of the college plant at present is about $125,000. In addition to this, there is a permanent endowment fund of $191,000, the annual interest from which goes toward the current expenses of the college. During the past seven years the college has received gifts aggregating $315,000.

The college maintains besides the collegiate department a conservatory of music, whose director is Prof. S. Harrison Lovewell. There are four members of the conservatory faculty, who have secured a wide reputation throughout the northwest for the quality of instruction imparted by them.

A preparatory department, known as Whitman Academy, is also maintained in connection with the college, the graduates of which are prepared to enter any college in the United States.

The college proper offers three courses of instruction, leading to the degrees of Bachelor of Arts, Bachelor of Science and Bachelor of Literature. The college faculty proper consists of twelve members, which together with the conservatory makes the total number of instructors in the institution sixteen. The members of the faculty are earnest and enthusiastic and devoted to their work. They come from the best eastern colleges and universities, and are well adapted to the work which they have undertaken.

The college has a well selected library of 9,000 volumes and 8,000 pamphlets. There is also a well equipped reading room, which is supplied with all the latest magazines and periodicals. The scientific departments have ample laboratories, which are fitted up with the best of modern appliances for the carrying on of the work outlined in the courses offered. A large number of scholarships are awarded each year for proficiency in school work done at Whitman or at the academies and high schools throughout its field, and to other deserving students who are in need of aid.

Whitman stands for thorough scholarship in every department, and no student is allowed to participate in athletic contests who has failed in any of his college work. The students are noted throughout the State for intense college spirit, which has become a distinctive feature of the institution. Under the able

and energetic management of President S. B. L. Penrose it is flourishing in every department, and ranks as a college of the first importance. It is distinctively classical in its aims, and lays no claim to university features. Graduates of Whitman College are entitled to state teachers' certificates upon taking an examination in school law and pedagogy.

Whitworth College—The Home School.

The object of the Presbyterian Church in establishing Whitworth College is to extend the benign influences of Christian education. In no sense is it a sectarian institution. It seeks to serve the commonwealth in particular and humanity in general by basing character upon the Christian faith and practice, believng that civilization and republican institutions demand moral enlightenment and that practical good will exemplified by the Saviour of the world.

The college owes its name to Rev. George F. Whitworth, D. D., the first Presbyterian minister to cross the Columbia river, and who has devoted fifty years to missionary effort in the Territory and State of Washington.

The college owes its present bright prospects to generous eastern contributions. Large amounts have been given by donors whose names the college is not at liberty to disclose, for a two-fold purpose: First, to place the institution upon an effective property basis; secondly, to provide an ample maintenance fund to conduct the institution until permanent endowments have been secured. Few denominational schools have ever been started in this way. Usually the school struggles along until after a long period of financial insufficiency and educational efficiency adequate funds are secured. Whitworth College has ample funds to meet all its present requirements while it is demonstrating its usefulness. Having already won a large and enthusiastic constituency and having already found its educational field, it is confidently believed that liberal endowments will come to its support in its splendid opportunity and work.

The college seat is the city of Tacoma, where it occupies valuable properties, the gift, largely, of the citizens of Tacoma. Both the seat and the site are admirable from every point of view. The college stands upon Inspiration Point, is about four hundred feet above the level of the sea, and has water and moun

THE RESIDENCE.

ADMINISTRATION BUILDING, WHITWORTH COLLEGE, TACOMA, WASH.

tain view unsurpassed in the world, while the bracing salt air, the sunshine, the pure water supplied in abundance by a mountain-fed spring, the unexcelled drainage, the street car service, and suburban location in a famous residence section, give ideal conditions for a school.

The college maintains both a preparatory school and regular college courses, two in number — the classical and scientific. The school of music is an important department, growing in popularity and patronage. The college has an able faculty, the teachers being graduates of the leading colleges and universities of this country, the most of the faculty having taken post-graduate courses in this country or in Europe. With such talent, the best of instruction is given.

The college claims two distinctive features of peculiar merit: First, it is a *home school*, emphasizing the importance of the home life of students during the years of acquisition. The home life of Whitworth College is placed upon a secure plane, on account of the residence of so many members of the faculty in the college home. This social contact has not only disciplinary effectiveness, but that polish and ease in manner that mark the cultivated man and woman.

To this feature the beautiful buildings, with their large, well furnished public rooms, add unusual charm and opportunity. The college buildings, three in number, are architecturally unique and commodious to a degree seldom found in educational institutions. The students' living rooms are large and supplied with all the modern conveniences.

The other distinctive feature lies in the small classes and consequent opportunity for individual teaching. This enables the student to master each lesson, to receive adequate personal attention both in preparation and in recitation. In these days of overcrowded state schools of every description, from primary to university, this is a consideration of very great value.

The college is particularly fortunate for a new school in the size and value of its library. It possesses already about eight thousand volumes of well selected books, being particularly strong in literature, fine arts and history, with an excellent reference department.

Taken altogether, Whitworth College is a strictly up-to-date institution, under an aggressive administration, conducted by a

denomination of marked solidity in all its institutional activities, in a field unusually appreciative of what is best in educational effort.

CONCLUSION.

In conclusion of our presentation of the educational system of the State, we add the following table of school statistics for the year 1900. As a number of the county superintendents failed to answer the question in regard to the number of graded schools in their counties, that column is incomplete, but the other columns are complete so far as the records of the State Superintendent of Public Instruction can make them.

It will be observed that there are 139,097 children in the State of school age, and that of this number 115,104 are enrolled in the public schools of the State. When we add to the number of those actually enrolled in public schools, the large number of those enumerated as of school age, who are attending private schools, academies and colleges, and the various State institutions of higher learning, conservatively estimated at 7,000, we have 122,104 out of 139,097 children of school age actually attending. To have 88 per cent. of its youth attending school is a record of which the State may be justly proud, and promises well for the intelligence and enlightenment of its future citizens.

COUNTIES.	*School Census.*			*Number Attending School.*			*Number Schools in County*	*Graded Schools*	*Valuation School Property*
	Male.	Fem.	Total.	Male.	Fem.	Total.			
Adams	856	676	1,532	559	515	1,084	41	2	$44,125
Asotin	684	602	1,286	567	478	1,045	24	2	19,115
Chehalis	2,087	2,004	4,091	1,647	1,638	3,285	64	.....	97,136
Chelan	575	535	1,110	417	418	835	28	.....	28,300
Clallam	806	727	1,533	687	608	1,295	37	.....	59,299
Clarke	2,394	2,155	4,549	1,946	1,823	3,769	78	7	94,637
Columbia	1,239	1,133	2,372	1,025	939	1,964	48	.....	57,980
Cowlitz	1,321	1,281	2,602	1,140	1,181	2,321	60	.....	40,164
Douglas	815	743	1,558	712	607	1,382	46	1	44,514
Ferry	404	324	728	182	127	307	8	.....	22,150
Franklin	47	40	87	44	42	86	4	.....	4,327
Garfield	696	658	1,354	633	616	1,249	36	.....	48,627
Island	273	237	510	218	215	433	14	.....	9,611
Jefferson	687	618	1,305	531	526	1,057	20	2	192,780

COUNTIES.	School Census.			Number Attending School.			Number Schools in County....	Graded Schools...	Valuation School Property..
	Male.	Fem.	Total.	Male.	Fem.	Total.			
King.....	11,371	11,453	22,824	8,701	9,430	18,131	151	19	$134,622
Kitsap.....	968	891	1,859	798	724	1,522	46	.....	27,465
Kittitas.....	1,430	1,411	2,841	1,357	1,403	2,760	35	4	92,999
Klickitat.....	1,119	1,002	2,121	.....	.....	1,859	53	.....	27,710
Lewis.....	2,675	2,563	5,238	2,318	2,187	4,505	105	8	97,868
Lincoln	2,128	1,935	4,063	1,933	1,740	3,673	107	.....	70,700
Mason	524	482	1,006	433	384	817	40	.....	34,755
Okanogan.....	446	365	811	318	258	576	26	.....	19,899
Pacific.....	914	830	1,744	757	733	1,490	38	4	51,015
Pierce.....	7,388	7,285	14,668	5,697	5,731	11,428	113	18	1,020,169
San Juan.....	431	453	884	389	365	754	26	None.	15,601
Skagit.....	1,956	1,918	3,874	1,676	1,706	3,382	68	14	70,000
Skamania.....	243	214	457	201	180	381	15	.....	2,933
Snohomish....	3,262	3,100	6,362	2,560	2,520	5,080	83	8	287,725
Spokane	7,091	7,087	14,178	6,013	5,983	11,996	158	14	858,931
Stevens.....	1,625	1,463	3,088	1,380	1,264	2,644	81	7	31,856
Thurston.....	1,603	1,616	3,219	1,261	1,283	2,544	66	6	123,684
Wahkiakum ..	456	356	852	345	318	663	22	2	15,550
Walla Walla..	2,373	2,394	4,767	2,031	2,071	4,102	62	8	216,860
Whatcom.....	3,441	3,229	6,670	2,900	2,940	5,840	83	10	267,300
Whitman	4,661	4,548	9,207	4,126	3,780	7,906	161	18	297,242
Yakima.....	1,873	1,872	3,745	1,461	1,476	2,937	51	.....	98,019
Totals.....	70,857	68,240	139,097	56,973	56,272	115,104	2,059	.....	$9,527,649

THE STATE CAPITOL BUILDING.

The state capital, as elsewhere stated, is located at Olympia, in Thurston county. The state capitol building, a cut of which will be found as a frontispiece in this volume, will, when completed, have cost the State the sum of $350,000, that sum having been appropriated for the same by the legislature of 1901.

The front wing of the building is now completed, and occupied by the state officers, and the rear portion is under course of construction at the present time. The building is of gray sandstone, from the Chuckanut quarries of Whatcom county. When completed the building will furnish convenient and commodious quarters for all of the state officers, the supreme court, legislative halls, committee rooms and the state library. It occupies an imposing site in the heart of the city, at the rear of a beautiful little park, and is well suited to the demands of this young State for many years to come.

The capitol commission, having charge of the construction of the building, is composed as follows: John R. Rogers, Governor, *ex-officio* chairman; John D. Atkinson, State Auditor; James McNeeley, of Buckley; Van R. Pierson, of Seattle, and Sol. G. Simpson, of Shelton.

STATE PENAL AND REFORMATORY INSTITUTIONS.

The State, in addition to making provision for the blind, deaf and feeble minded, the institution for which is elsewhere described, has a reform school for juvenile offenders, a penitentiary conducted on the punative and reformative system; a soldiers' home, and two hospitals for the insane, which are conducted strictly on humanitarian principles.

THE REFORM SCHOOL.

The Washington State Reform School is located at Chehalis, and is under the able superintendence of Thomas P. Westendorf. In this institution on the 30th day of September, 1900, there were 121 boys and 40 girls. Most efficient discipline is maintained, and the moral strength of its atmosphere is vigilantly guarded. There are three ladies employed in the school work, one in the boys' department and two in the girls' school room. Public school text books are used, and the course of studies adopted by the State Board of Education followed as far as possible.

The boys and girls, protected from the allurements which beset them at home, usually make rapid advancement in their studies. In connection with the institution is a farm, upon which the boys find employment, and in addition to this there are shops of various kinds. The shoemakers, besides making and mending the shoes of the boys and girls, have made shoes and slippers for both of the insane hospitals and the soldiers' home. This is a matter of economy for the State, and a matter of practical trades teaching for the boys. In the tailor shop the boys are employed in the manufacture of clothing for their department, and they have also made several hundred suits of men's clothing for the insane hospitals. The carpentry and painting forces have kept up the necessary repairs, besides making all necessary improvements.

In the girls' department is a sewing room, in which is made all of their clothing and the underclothing for the boys. Much fancy needlework is done, some becoming quite expert in this line. They do cooking, washing and housework for themselves, and are taught typewriting. Some are supplied with musical instruments by friends, and there is an orchestra which furnishes entertaining music for the exhibitions given from time to time for the public in the chapel. The chapel exercises have always been made attractive, and it is pleasant to remember that the boys and girls who go out remember the lessons there taught so kindly. An institution so conducted must prove of great benefit, and many boys and girls have gone from this institution reformed and ready to enter upon the honest pursuits of life.

STATE PENITENTIARY.

The State Penitentiary is located at Walla Walla. In this institution there is a jute mill and brick yard, which give employment to a large number of the inmates. Others are employed in taking care of the institution in the various departments and in caring for the grounds, which are always kept in excellent shape, and in operating the farm that is maintained in connection therewith. There is a prison library connected with the institution. The discipline is well maintained under the management of J. B. Catron, superintendent. The sanitary condition of the place is well taken care of and the health of the prisoners duly looked after. There is a parole system in effect, under the laws of the State, and the operation of the same since its passage has given most excellent satisfaction. As a rule, those who have been paroled have scrupulously lived up to the requirements of the law, and nearly all of them have been steadily em ployed during their period of parole.

SOLDIERS' HOME.

The Soldiers' Home is located at Orting, in Pierce county. The situation of the home is healthful, and it is provided with modern and well ventilated buildings, and in connection with the same there is a farm, supplied with all kinds of live stock and poultry for the use of the inmates. This affords light and easy employment to those who are able and wish to employ a part of their time. They have a library, a hospital, an audience hall,

billiard parlor and amusement room, and other conveniences for the use of the inmates of the institution. The superintendent of the home is John M. Carson. There are 190 old soldiers who find a home in the institution.

HOSPITALS FOR THE INSANE.

There are two public hospitals for the insane of the State — the Western Washington Hospital, which is located near Steilacoom, in Pierce county, and the Eastern Washington Hospital, which is located at Medical Lake, Spokane county.

At each of these places large and commodious buildings have been erected, and the same are conducted strictly on humanitarian principles. Library and museum facilities are afforded the inmates, and light labor, when deemed expedient by the superintendent, is provided. Every known method of treatment is resorted to to restore these unfortunates, where possible, to their right minds. F. L. Goddard, M. D., is superintendent of the Western Washington Hospital, and J. D. McLean, M. D., is superintendent of the Eastern Washington Hospital.

Our state institutions are all under the general supervision and management of a board, appointed by the governor, known as the State Board of Control. This board, as now composed, consists of Hon. Henry Drum, of Spokane; Charles S. Reed, of Seattle, and Ernest Lister, of Tacoma, all of whom now reside at the state capital, that being the office and headquarters of the board.

MISCELLANEOUS INDUSTRIES AND ENTERPRISES.

EVERETT PULP AND PAPER MILL.

The Everett Pulp and Paper Company operates one of the largest paper mills in the country, the plant having been established about the year 1892, and having been almost continuously in operation since that date. The paper is manufactured from wood pulp, from which all kinds of wrapping papers, book paper, and a fair grade of writing paper are made. The company does not make any of the common grades used for printing newspapers. The paper on which this book is printed was manufactured at this mill.

This plant for the year 1900 used in making paper 12,000 cords of wood; for making steam at the mill 35,000 cords of wood, and the output was 5,500 tons of paper. of the value of $440,000. In connection with the mill 249 people were employed, and received in wages the total sum of $221,250. Like most of the enterprises situated in the State of Washington, the plant has a ready market locally, as well as shipping paper to all of the Pacific coast states and foreign countries, principally Hawaii, Australia, China and Japan, to which in 1900 some 2,000 tons of paper were shipped.

THE PACIFIC COAST CONDENSED MILK COMPANY.

This company is located at Kent, in King county, and is in the heart of a rich agricultural and dairying community. The factory was established some two or three years ago, and manufactures what is said to be, by dealers, a very first quality of condensed milk and sterilized cream. There is a ready market, and the Carnation brand sterilized cream and condensed milk is becoming more popular and in increased demand.

THE TACOMA SMELTER.

The Tacoma Smelting and Refining Company was established and begun smelting ore in September, 1890. It was continu-

THE EVERETT PULP AND PAPER MILL COMPANY'S PLANT.

ously operated until 1898, when it was reorganized under the name of the Tacoma Smelting Company. This plant is located near the city of Tacoma, Pierce county, and under its present manager, W. R. Rust, improvements have been made and additional furnaces built, the daily capacity being 380 tons of ore. Through the courtesy of the manager and to show the magnitude and value of a plant of this kind, we are enabled to give the following statement of the ore smelted and the value of the output for the year ending May 31, 1901:

Ore smelted (tons)	87,154
Gold	$1,079,697
Silver	669,259
Lead	122,895
Copper	204,323
Total	$2,176,174

The company has now under process of construction two additional furnaces for smelting copper ores, together with a modern converting plant for Bessemerizing copper matte, which when completed, will bring the capacity of the plant up to 700 tons of ore per day.

THE EVERETT SMELTER.

The Puget Sound Reduction Company established their works near Everett, in Snohomish county, and began smelting ores in 1894, and their plant has been continuously operated since that time. Under the management of W. C. Butler, improvements have recently been made, the roasting capacity of the plant having been increased until it is now capable of treating about 350 tons of ore per day. Through the courtesy of the manager, as showing the capacity and value of this plant we are enabled to give the following statement of the ore smelted and the value of the output for the year ending December 31, 1900:

Ores smelted (tons)	72,000
Gold	$514,000
Silver	1,134,000
Lead	510,000
Total	$2,158,000

The management has recently added to the institution an arsenic plant, the only one in the United States.

THE NORTHPORT SMELTER.

There is also a smelter located at Northport, Stevens county, Mr. Bela Kadish being manager of the same. We have been

unable to obtain any data or information and hence are unable to give any further statement concerning it.

FLOURING MILLS.

The manufacture of flour is one of the most important industries of the state which is not herein elsewhere specifically mentioned. This Bureau has been unable to get a complete list of the mills in the state, or reliable statistics as to the amount of grain consumed, or the output for the state; but we draw from the 1900 report of the State Labor Commissioner the following figures, which show the importance and value of the industry. This report is based on the output of twenty-one mills.

Aggregate value of these mills	$610,129
Number of bushels of wheat ground, 1900	5,264,001
Number of barrels flour produced	1,062,884
Number of tons bran and feed	96,267

The average product in flour from a given number of bushels of wheat as shown by the aggregate reports of five first-class mills, is at the rate of exactly one barrel of flour from each four and one-half bushels of wheat ground.

The statements here given embrace more than one-half of the flouring mills of the state.

Since the preparation of the above report other mills have been erected and some of the old mills have been enlarged. There is a mill having a capacity of 600 barrels a day now in operation in Everett, which was not built when the report of 1900 was compiled.

From the statements given above, the value of the output of the twenty-one mills for 1900, at jobbers' prices, $3.25 per barrel for flour and $16.50 per ton for bran, can be determined. It amounts to the magnificent sum of $5,042,578, which is only a part of the output for the state. The increased demand for our bread stuffs in China, Japan and the islands of the Pacific, adds immense value to this industry, which is destined to increase and become of greater importance to the people of the state.

SHIP BUILDING.

The ship building industry on Puget Sound and Grays Harbor, is another of the important industries of the State. In the year 1900 there were a great many vessels, particularly of the larger sea-going class, built in the State. These ship yards are

located at Aberdeen, on Grays Harbor, Port Blakely, Ballard, Everett, Whatcom, Tacoma and Seattle. The vessels built consist of every character of water craft, from the launch and tug boat to the large four masted schooners and magnificent steamships.

During the year the large steamer, John S. Kimball, was constructed at Everett, as well as a number of other vessels of more or less importance.

At Whatcom, the General Frisbee was built. At Tacoma, the steamer Mainlander; at Port Blakely, the four masted schooner Helene, besides several other vessels. The large schooner Stimson was built at Ballard. At Grays Harbor nine or ten vessels of various sizes were built, among others a steamer of 800 tons measurement, and a schooner of 750 tons.

Moran Bros. Company, of Seattle, are credited with a number of vessels, among which is the United States Army transport Seward, built as the George W. Dickinson, for Seattle parties, and sold to the government as an army transport and supply boat. This company has also contracted for the building of one of the new battleships, upon which active operations have begun.

The outlook for the future of the ship building industry is bright and it will no doubt increase and grow in importance, so long as wood shall be used in the construction of vessels, as the superiority of our timber for this purpose is recognized the world over. A test of the comparative strength of eastern pine, eastern oak, and Washington fir, shows that the pine will break at a pressure of 1,610 pounds, eastern oak at a pressure of 2,470 pounds, and Washington fir at a pressure of 4,321 pounds. The enormous advantage of this wood for heavy service may be judged accordingly.

SEWER PIPE AND FIRE BRICK.

In various portions of the State a high grade of commercial clay is found, suitable for the manufacture of fire brick, sewer pipe, terra cotta and other earthenware products. Large bodies of these clays are said to exist in Stevens county, where at Clayton, on the Spokane Falls and Northern Railway, a plant was built in 1893 at a cost of $200,000, which produces all manner of earthenware.

The Denny Clay Works, located at South Seattle, is an im-

portant industry, maintaining and operating a large plant, where first-class sewer pipe of various sizes and dimensions is manufactured, as well as white pressed brick for building purposes and common pressed brick for street paving.

Fine bodies of fire clay are said to exist in Kitsap county, but they are as yet undeveloped.

STONE.

All varieties of first-class building stone can be found within the borders of the State, including sandstone, granite, onyx and marble.

Valuable building stone is quarried at the Chuckanut quarries, in Whatcom county; at Tenino, Thurston county, as well as in other parts of the State, the same being of a very superior quality for building stone. First-class granite quarries are to be found in different portions of the Cascade mountains. Marble of high quality is also found, and it is believed will prove with development to have a high commercial value. In Stevens county, black marble and onyx are found.

Limestone abounds at different places, the Roche Harbor Lime Company, located on San Juan island, being the most important enterprise of the kind in the State. Lime rock is found in unlimited quantities, and the works have a capacity of 1,500 barrels per day. In connection with the same is a barrel factory, having a daily capacity of 4,000 barrels. The local markets are supplied with lime from these works, but the greater portion of the output is exported, and finds its way into the harbors of Pacific Coast points, Hawaii and other foreign ports.

THE PUGET SOUND NAVY YARD.

The Puget Sound Navy Yard, which has just been advanced to that distinction by a recent order of Secretary Long of the Navy Department, and formerly known as the Puget Sound Naval Station, is situated on Port Orchard bay, an arm of the Sound reaching into Kitsap county, and about fourteen miles due west from the city of Seattle. This navy yard is situated on a beautiful land-locked bay, where it has facilities for protection from the elements, and in case of war, from the guns of a foreign fleet. It is so situated that it would be utterly impossible for any foreign fleet to enter—first, on account of the fortifications

at Point Wilson and Forts Alger and Casey, which are now under way; and second, even if it were possible to pass these fortifications at the entrance of Puget Sound, it would encounter such dangers and difficulties at the entrance to Port Orchard, from the guns of Fort Bemis, and the torpedoes and mines, enough of which could be placed in the narrow channel to sink all the fleets of the world, as to effectually prevent it from approaching near enough to the navy yard to do any damage.

This yard was established in the early 90's, and has a magnificent dock, where the largest vessels of our navy can be quickly and safely repaired at all seasons of the year. It is 650 feet long, 39 feet deep, 67 feet wide at the bottom, and 130 feet wide at the top. It is the only government dry dock on the Pacific coast where the battleships of our navy can be received and repaired. The Oregon, Iowa and Wisconsin have heretofore been successfully cleaned and repaired, and the Oregon is now in the dock undergoing extensive repairs.

The grounds, wharves, shops, buildings and equipments have cost more than $1,500,000. The buildings and equipments are all of the modern and approved type, which makes it one of the leading navy yards of the country.

Although this is a government institution, yet it is a most valuable enterprise for the people of the State, as a large number of men receive annually thousands of dollars in wages from their employment here, with whom our merchants have a valuable trade.

THE SNOQUALMIE WATER POWER PLANT AND TRANSMISSION SYSTEM.

Within the past few years a plant has heen established to utilize the natural water power of Snoqualmie Falls, in generating electricity to be transmitted to Seattle, Tacoma, and other points on the sound, for power, lighting and manufacturing purposes. The Snoqualmie river has at the falls a vertical drop of 270 feet, giving an available energy of from thirty to one hundred thousand horse power. This plant has water wheels and electrical machinery all installed together in a large underground chamber, whose floor is directly above the tail race tunnel, which extends to the river below the falls. This plant represents an investment of about $1,000,000, and is located about 34½ miles northeast from Tacoma, 34½ miles southeast from

Everett, and 25 miles east from Seattle. It is expected that this system will furnish a great deal of the power for lighting and manufacturing purposes, and it is a valuable adjunct to the business development of those cities.

THE UNITED STATES MINT.

A branch of the United States Mint, known as the Seattle assay office, was located at Seattle in the year 1898, the year following the great discovery of gold in the Klondike and Alaska. This is a most valuable institution to the people of the State and of Alaska, as the mining interests are of paramount importance, particularly in Alaska.

Receipts at this office since its establishment have exceeded all expectations entertained prior to its location here. It received during the year 1898, between July 3d and the close of the year, $5,550,032. In 1899 it received $12,823,635, and in 1900 $22,038,775, making a grand total of $40,412,442. This has not only been of local benefit to the city where it is located, but to every part of the state, and the magnificent showing is a standing advertisement of the great importance of Puget Sound as the distributing and receiving point of the northwest and Alaska.

RAILROADS AND TRANSPORTATION LINES.

Washington is a State of magnificent distances, being 350 miles long from east to west and an average of 200 miles wide from north to south. But notwithstanding the distances, she is traversed in every direction by lines of railroad by land, and steamboat lines on her rivers and waters, which combined afford remarkably advantageous transportation facilities, considering her age and population. She has two transcontinental railroads which she can claim as her own, the Pacific Coast terminus of each being on Puget Sound. In addition to these, she has the Canadian Pacific and the Burlington line, which operate through trains, touching the ports of Puget Sound, as well as the O. R. & N. Railway, connecting with the Union Pacific, which extends into Eastern Washington along the Columbia and Snake rivers, and has its terminus at Portland, Ore., and gives additional facilities for transportation to the farmers of the great wheat belt. The Southern Pacific Railroad also reaches the southern borders of the State, the California and Oregon branch line, extending to Portland, Ore.

The Northern Pacific is the pioneer line of the State, having completed its line to Wallula in 1883 and to Tacoma in 1885, crossing the Cascade mountains by what is known as a switch-back, and was thus operated until the completion of the Stampede tunnel in 1888. This railroad has done much for the development of the State, having encouraged every industry at all points, both in agriculture, irrigation, lumbering and mining. It was also the first to develop an Oriental traffic, placing in operation, in connection with its railroad lines, a line of steamers between Puget Sound and the Orient. This railroad has a mileage within the State as follows: Main line, 593.33; sixteen branch lines, aggregating 446.91, making a total of 1,040.24 miles. These branch lines have been built from time to time, extending here and there as the demand would warrant in opening up and developing the various localities reached.

In addition to the foregoing, the Seattle & International Railroad, an independent line, operated as a branch of this road, has a mileage of 185 miles, and the Washington & Columbia River Railroad, another independent line, operated as a branch of the Northern Pacific Railway, has a mileage in this State of 116 miles, making an aggregate mileage for the Northern Pacific in the State of Washington of 1,341.24 miles. The Northern Pacific Railroad Company has now under course of construction a branch extending from Hoquiam, in a northwesterly direction, to the Quinault Indian reservation, a distance of some 30 miles, opening up thereby a magnificent body of timber, and a rich agricultural country for settlement.

The Great Northern Railroad line also traverses the State from east to west, and from the city of Seattle to the international boundary line. It has a mileage in the State of 477.86 miles. Construction of this line of road was commenced in 1890, and the line was completed in 1892, crossing the Cascade mountains by switchback, the latter of which was done away with by the completion of the great Cascade tunnel, in 1900. As a characteristic of the management of this road much has been done to develop the country along its line by its aid in transportation facilities and encouragement to irrigation and other enterprises. It also has running in connection with its line, under contract, the Nippon Yusen Kaisha, the great Japanese Oriental Steamship line, operating a line of trans-Pacific steamers.

The Great Northern Railroad Company has now under construction what will, when completed, be the two largest freight carrying steamships afloat. To form some reasonable conception of the magnitude of these great ships, we herewith give the actual dimensions. Each will be 650 feet long, 73 feet wide, and 56 feet deep, and having a displacement of 33,000 tons. If placed in an average city street, one of these big ships would fill it so that there would barely be room for men to pass, while the officers on the bridge of the ship could look into the sixth or seventh story windows of a sky-scraper, and nearly as much freight as could be stored in three big city warehouses can go into the holds of each of these big ships. They are not intended for passenger vessels, but probably some passenger equipment will be made. It is the intention to make them not only the largest but the swiftest of cargo carriers in the world, the machinery and engines being designed especially for speed. These splen-

FRUIT SHIPPING SCENE, WENATCHEE, WASH.

As many as 1,000 boxes are frequently received at a single shipment.

did ocean liners will be operated between the western terminus of the Great Northern Railroad on Puget Sound, and the ports of the Orient.

The Spokane Falls & Northern, having a mileage of 139 miles, is an independent line, operated as a branch of the Great Northern. This company is alert to the demands of the State, and are projecting branch lines from Wenatchee through the counties of Chelan and Okanogan to the international boundary, and from this line a branch extending through Okanogan and ferry counties to a connection with the Spokane Falls & Northern at Marcus, which will afford transportation facilities for the valuable mines situated in these counties, and will promote the settlement of the country, there being valuable farming and grazing lands still open.

In addition to this, the Oregon Railway and Navigation Company has a mileage in the State of 509.18 miles, extending through the Walla Walla country to Spokane, with numerous branch lines throughout the wheat belt of the State.

There are also numerous short lines in the western part of the State, chiefly used in conveying logs and lumber products.

The railroads actually interested in the development and commerce of this State and her cities and ports, notably the Northern Pacific and Great Northern, have afforded this Bureau every facility possible in compiling this work, and we are thus able to make an approximate estimate, which is reasonably correct, of the initial freight originating in the State of Washington for the year ending December 31, 1900, and which gives a fair idea of the vast resources of the State. The freight shipments were as follows:

Hay	67,104 tons
Wheat	578,397 tons
Oats and other grain	72,203 tons
Fruit and vegetables	35,157 tons
Coal	2,029,617 tons
Ores	8,247 tons
Lumber	18,952 cars
Shingles	23,734 cars
Other forest products (chiefly logs)	131,204 cars
Miscellaneous products	47,348 cars

There were received at the ports of Washington from other states and foreign countries for shipment over the railway lines nearly 16,000 carloads of miscellaneous freight.

The railroads some time since lowered their passenger rates to three cents a mile, without any compulsion, and it would seem

from the magnificent showing of the freight shipments that the business is in a healtny condition, and while there is actual competition among the various lines, particularly in the passenger traffic, this voluntary reduction of fares shows a settled policy on their part to aid in building up the country. This is further evidenced by the reasonable rates given to homeseekers from the East who desire to avail themselves of the same in looking over this growing country.

This Bureau, in gathering the data hereinbefore given, has been treated with a great deal of courtesy by nearly all of the railroad officials, who have responded promptly to requests for desired information.

TRANSPORTATION BY WATER.

In addition to the railroad facilities above mentioned, there are lines of steamboats carrying freight and passengers, which ply on the Snake and Columbia rivers in Eastern Washington, and on the Snohomish, Skagit and Nooksack, emptying into Puget Sound, and the Chehalis river flowing into Grays Harbor. Also, in addition to the numerous Oriental steamship lines, of which mention is elsewhere made in this report, there are a great many other companies operating boats on the Pacific Coast, among which are the Pacific Coast Company, the Empire line, the Washington & Alaska Transportation Company, all running magnificent steamers in the coastwise trade, and plying between the ports of Puget Sound, California, Oregon, British Columbia and Alaska.

In addititon to the foregoing, a great factor in the commerce of the State of Washington is the Puget Sound fleet of steamers, which, not including the small sailing and fishing boats, pleasure craft, such as launches, steam, naptha, etc., aggregate 225 vessels. These vessels are of all sizes and dimensions, from the ordinary small tug boat and freighter to palatial and commodious steamers which traverse the waters of the sound, touching at the various points of call on its seventeen hundred miles of shore line, and the navigable rivers which flow into it, affording the people unexcelled advantages for marketing their products. There are 195 ports, and it is estimated that the various steamers annually carry 1,000,000 passengers and approximately 900,000 tons of freight.

CONCLUDING AND MISCELLANEOUS NOTES.

No doubt the reader who peruses this report will be greatly impressed with the vast natural resources of the State and the great possibilities for development in each and every part of it. While many of the people of our older states regard this as a sort of wild and woolly wilderness, we beg to impress upon their minds the fact that the State of Washington is now the home of more than six hundred thousand people. Then again, our eastern friends may wonder what type or class of people inhabit this remote region, and in reply to this we will say that there is no peculiar type — or possibly better to say that there is a mixture of all types and a blending of those coming from all of the states of the Union, with a fair proportion of citizens of foreign birth, representing all manner of religious belief and practice, and every phase of political allegiance, who have come hither to make homes for themselves and their families, and are now vitally interested in the State of their adoption.

When you examine the census returns and compare the figures showing the growth of this State for a term of years, it may be something of a surprise to note that a majority of the people have come out from the East only a few years ago. In business methods and spirit Washington is very much like Eastern States, especially the Lake States, except that arrivals from the East seem to partake of the spirit of the West, and become more aggressive in business, politics and the general pursuits of life.

In addition to the educational facilities which are elsewhere mentioned, there are other agencies of intellectual life unsurpassed by any of the older states, there being something over two hundred weekly newspapers published in the various towns and villages of the State. And the dailies published in the larger cities compare favorably with almost any of the newspapers in the land. In addition to these, there are a number of literary and commercial magazines of exceptional merit. The State has

a law for the maintenance of free public libraries, under which many of the larger towns have made excellent beginnings. Not alone do Washington men partake of the western spirit, but the Washington woman is an institution in herself. She is keen, alert, eager for impression, education, culture and experience—ever looking forward to that which will widen her sphere. There are something near a half-hundred flourishing women's clubs—organizations which are doing much toward the upbuilding of the intellectual, moral, social and religious atmosphere of the State.

The new-comer is not long in learning that there is less of conventionality here than in the east, but a greater energy and closer application to business. The State has all necessary laws enacted to secure the safety and comfort of its citizens, which are rigidly enforced in every part of the State. It can be justly claimed for the people of this State that they are as peaceable and law abiding as those of the older communities, and that in addition to the educational facilities and advantages which have been hereinbefore fully described, there are churches of some one or more of the various denominations to be found in every city and village in the State.

EXEMPTION LAWS.

The people of the state, who from any cause become unable to pay their debts, are protected from penury by having exempted from sale, under execution, a reasonable amount of property. Every head of a family is entitled to a homestead, consisting of the dwelling house in which he resides, together with the land on which the same is situated, not exceeding in value the sum of $2,000. In addition to this he also has exempted family wearing apparel, private libraries, household goods, and a certain number of cows, horses, mules and other live stock, tools, utensils, etc. Professional men are exempted libraries, office furniture, fixtures, etc., to the value of $1,000. Pension money, the proceeds of fire insurance on exempted property, and the proceeds of all life and accident insurance, is exempt from liability on account of debt. Also the separate property, real or personal, of a married woman, belonging to her prior to, or that she may have acquired subsequent to her marriage, is exempted from judgment and execution on any lia-

bility of her husband. Personal property to the value of $300 is free from taxation and the earnings of all laboring men, earned within ninety days, to the value of $75, is exempt from garnishment. The legislature of the state has also provided ample protection to the working classes in the enactment of lien laws whereby every man exercising this right can protect himself against loss for labor performed.

HEALTHFULNESS.

The State of Washington has pre-eminently a healthful climate, and by reason of its topography a person may find almost any climate he may desire, and can also find any altitude from that of the sea level to the top of the highest mountain, Rainier, 14,444 feet high. On Puget Sound and the coast, west of the Cascade mountains, there is the invigorating and healthful salt breeze from the Pacific ocean, and east of the Cascade mountains the atmosphere is dry and warm, and has a strong tonic influence upon all such persons as require a warm, dry climate. The nights are always cool, even after the hottest days in summer, a fact which lends vigor and comfort to the inhabitants. The variations of temperature are slight as compared with other states, and the people are not subjected to sudden climatic changes, which are so detrimental to health. The medium or low temperature renders innocuous the miasmas or other deleterious exhalations which might be engendered by extreme heat, and as a consequence malarial diseases are at a minimum. From the best available data at hand for a number of years, this Bureau has found the highest death rate for any year since 1890 to be 1 in 153 of the estimated population of the State, which, compared with the death rates of other states and countries, establishes the healthfulness of our climate.

WHO SHOULD IMMIGRATE TO THE STATE.

The man with money, who is looking for investment, upon the perusal of this report, can certainly satisfy himself that there is an opening here in some of the lines of business, or in the development of the natural resources of the State, many of which are as yet practically untouched, and which require money for development. Only those who are capable of aiding in the development of the country, and not only in making it contribute

to their maintenance, but to that of others as well, ought to immigrate. Unless they can reasonably hope to do this, they had better stay where they are. The indolent and shiftless classes fare better in the thickly populated parts of the country, and those who expect to get something for nothing need not look to this country, as by coming here they would certainly be disappointed and be an injury to the country. There are two things that are essential, and without one of these essentials you can do nothing towards the development of this State: First, you ought to have money for investment; or, second, if you have sufficient funds to enable you to get a start, and will apply your hands and energy to the opening up of the State's resources, you will be able to accomplish something for yourself and at the same time enlarge the opportunities for others.

The advantages usually offered by a new country are that the land is not already fully occupied, and that therefore every newcomer may find a farm and go to work with the reasonable certainty that he will be reasonably paid for intelligent and well directed industry. If he is unable to procure government land for settlement, he still may be able to buy lands at such prices as will warrant a change from less favored communities.

THOSE MOST NEEDED.

The tendency of the people of this age is to settle in the cities, the urban population of the country being continually swelled at a remarkable rate. Hence, farmers and those who engage in the cultivation of the soil and the development of our agricultural resources, dairying, fruit growing and stock raising, are the ones most desired and the ones most likely to succeed from the start. From the statements hereinbefore contained it is to be seen that farm products—beef, mutton, butter, cheese and fruit—have a home market where they find sale at remunerative prices, and consequently all labor devoted to their production would bring the best returns. In Lewis county, Okanogan and Clallam and in some other portions of the state there is still some government land to be had, and there is good agricultural, grazing and fruit land to be purchased in almost any portion of Western Washington at reasonable prices. It is, therefore, possible for each immigrant, who brings a few hundred dollars with him, to get some land, and by careful and dili-

gent effort he can engage at once in a business on his own account that will afford a reasonable living and continue to grow into a profitable enterprise. What is wanted is intelligent farmers with enough money to commence in business. Such men, by thrift and industry, can soon acquire and improve the best of homes in this state.

To those who have larger means and are looking for first-class improved farms that will produce more wheat to the acre than any other country on earth, and who are willing to pay for the same, the Palouse and Snake River countries, including the counties of Whitman, Spokane, Columbia, Douglas, Lincoln and Walla Walla, offer opportunities to procure the same. If you are looking for irrigated lands, in Kittitas, Yakima and Chelan counties such lands are to be had, and there are large areas of the same yet unimproved within the State.

The time of the settler is not always fully employed on his own property at first, and those who so desire can usually procure work at other occupations during certain parts of the year. Nearly every branch of mechanical industry is carried on to some extent in the State, and any reliable workman can nearly always find employment at good pay. The country is well supplied with mechanics, such as carpenters, blacksmiths, plasterers, brick and stone masons, etc., all of which, as well as the unskilled laborers who desire to work, find employment and are well paid. We believe this to be true in nearly every branch of labor, and hence the man who is able to adapt himself to the variety of occupations will be able to fully maintain himself on the farm, and after a few years of careful management would be able to improve his farm, and thus make himself independent.

Those without money we can but advise not to come to this State. But those with sufficient money to get a start and sufficient energy will find here an inviting field. Do not come expecting to take some other man's job, but on the contrary, when you come, do so with the expectation of making a place for yourself.

UNRESERVED AND UNOCCUPIED LANDS.

As hereinbefore stated, there is still some government land to be had in the State, a large portion of which, however, is classed as uncultivatable, although there is no doubt that considerable portions of the same will be found to be tillable and

equal in fertility to many other lands differently classed. The government lands available are located in the valleys towards the heads of the streams in the mountains, and somewhat remote from railroads and transpartation lines, but as the same are settled and the country developed, no doubt the railroads will supply the means of transportation as they have thus far done in other portions of the State. It is unnecessary to enter into the details of the manner of obtaining claims on United States lands, as all such information can be obtained, on application, from the United States land offices located in the various districts, seven of which are to be found within the borders of the State. We herewith append a statement giving their location, together with a table showing the amount of available government land remaining in each district, unappropriated and unreserved on the 1st day of July, 1901, also showing reserved and appropriated lands:

SEATTLE LAND DISTRICT.

YEAR.	*Area unappropriated and unreserved.*		*Reserved and appropriated.*	
	Surveyed, acres.	Uusurveyed, acres.	Reserved, acres.	Appropriated, acres.
1900	260,917	788,754	2,916,697	3,443,652
1901	210,112	791,132	2,917,489	3,491,287

OLYMPIA LAND DISTRICT.

1900	62,072	172,073	1,026,321	2,665,864
1901	51,431	171,833	1,026,469	2,676,597

SPOKANE LAND DISTRICT.

1900	753,423	1,098,997	1,978,979	4,408,351
1901	789,200	1,969,984	866,391	4,614,175

NORTH YAKIMA LAND DISTRICT.

1900	938,632	669,799	1,364,875	2,621,976
1901	630,040	805,379	1,364,873	2,377,498

WALLA WALLA LAND DISTRICT.

1900	1,039,449	669,799	1,772,091	1,821,898
1901	803,788	326,362	1,772,091	2,034,559

HOP PICKERS IN THE WASHINGTON HOP FIELDS.

WATERVILLE LAND DISTRICT.

YEAR.	*Area unappropriated and unreserved.*		*Reserved and appropriated.*	
	Surveyed, acres.	Unsurveyed, acres.	Reserved, acres.	Appropriated, acres.
1900	1,676,442	2,273,298	2,229,469	1,234,691
1901	1,489,366	2,111,690	2,229,469	2,107,095

VANCOUVER LAND DISTRICT.

1900	529,367	559,298	1,078,361	3,057,774
1901	508,424	495,313	1,070,786	3,155,277

From the above figures it will appear that on the 1st day of July, 1901, there were 11,153,050 acres of land in the State of Washington unreserved and unappropriated, of which 4,477,361 acres are surveyed, and 6,675,689 acres are unsurveyed. 11,247,568 acres of land have been reserved for one purpose and another, and 20,456,458 acres have been appropriated, making a total of 31,704,026 acres of appropriated and reserved lands.

STATE LANDS.

In addition to sections 16 and 36 in every township, which have generously and wisely been set aside by the government for the establishment of a permanent school fund in all of the newer states and territories, in the enabling act, authorizing the admission of Washington into the Union, the following grants of land, to be selected from the surveyed unappropriated and unselected lands of the United States within the State, were made for the following purposes, *i. e.:*

For public buildings at the state capital	132,000
For University of Washington	46,080
For scientific school	100,000
For state normal schools	100,000
For state charitable, penal, educational and reformatory institutions	200,000
For agricultural college	90,000
Total	668,080

Most of these lands have been selected by the state officials, and the selections have been approved by the Secretary of the Interior, as will appear by the following figures taken from the

annual report of the Commissioner of Public Lands, showing the condition of the several grants on October 1, 1900:

GRANT.	*Area of grant, acres.*	*Approved, acres.*	*Pending approval, acres.*
Public buildings at the state capital	132,000	101,455	39,823
State charitable, penal, educational, reformatory	200,000	199,076	9,098
State normal schools	100,000	86,419	8,918
State scientific schools	100,000	81,427	26,527
Agricultural colleges	90,000	78,598	12,263
State university	46,080	44,999	1,092
Indemnity	Indefinite.	39,671	20,323
Totals	668,080	631,648	118,048

Indemnity lands being in lieu of sections 16 and 36 that have been otherwise appropriated, the number of acres to cover the same is indefinite and therefore cannot be stated. From the data at hand we are unable to give the number of acres of State lands that have been sold, which is small, the larger part of the same still remaining the property of the State, and under the laws enacted by the legislature the lands, after appraisement, can be purchased or leased by making application to the State Land Commissioner, under the rules prescribed by the State Land Commission. The minimum price at which state lands can be sold is $10 per acre, and the minimum price at which the same can be leased is 10 cents per acre per year for periods of five years.

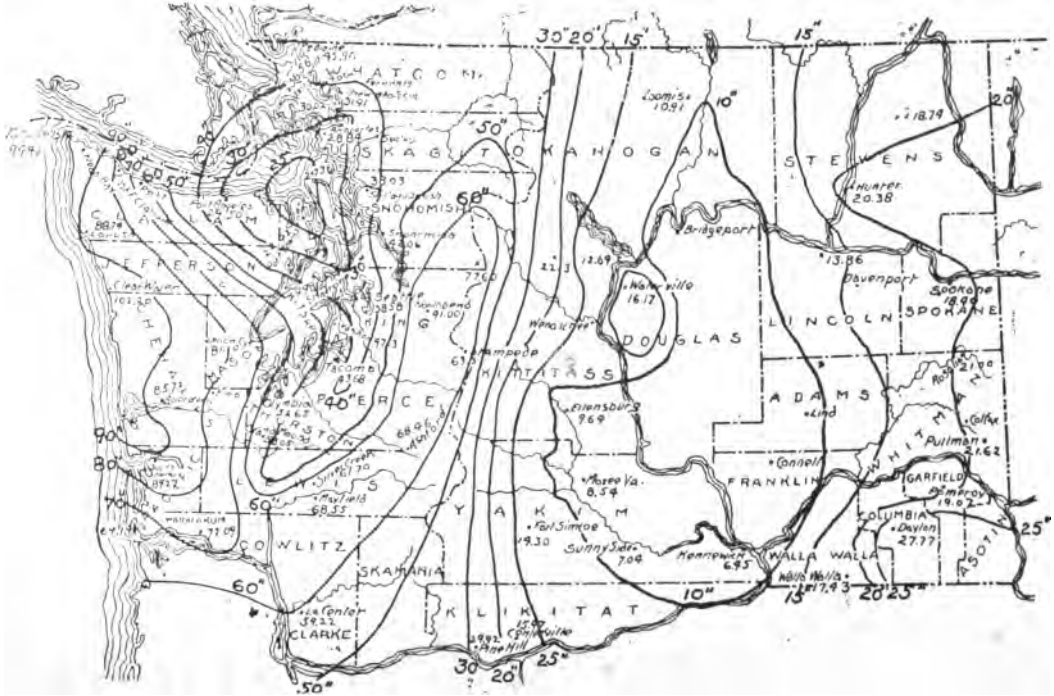
The following table, for the purpose of showing the location of the various State lands by counties, is herewith appended:

CONDITION OF STATE GRANTS APPROVED BY SECRETARY OF THE INTERIOR (BY COUNTIES).

COUNTY.	*Public buildings at capital.*	*Char., Ed., Pen. and Ref. Inst.*	*State normal schools.*	*Agricultural colleges.*	*Scientific school.*	*Indemnity.*
Adams						
Asotin						
Chehalis	3,891.40	5,325.51	1,376.68		2,520.00	
Chelan				4,343.37		
Clallam	26,459.59	440.00	3,725.93		637.80	510.75
Clarke	1,798.94	1,434.21	3,639.31			3,015.35

CONDITION OF STATE GRANTS—CONCLUDED.

COUNTY.	*Public buildings at capital.*	*Char., Ed., Pen. and Ref. Inst.*	*State normal schools.*	*Agricultural colleges.*	*Scientific school.*	*Indemnity.*
Columbia						1,720.00
Cowlitz		4,080.00	8,563.53	1,140.00	19,679.22	1,657.89
Douglas	12,332.72	73,816.84	22,631.85	21,633.86	11,504.61	
Ferry						
Franklin						
Garfield						
Island						4,246.41
Jefferson	8,945.00	32,420.15	10,099.28			3,315.27
King	3,604.48	4,197.07	2,868.53	2,080.00	1,679.64	5,988.22
Kittitas				5,930.39		
Kitsap	240.00				440.00	
Klickitat			7,785.93		3,706.39	2,101.99
Lewis	327.16	1,150.85	960.00		6,165.50	614.06
Lincoln		800.00				
Mason	5,429.03	9,204.72			2,567.22	
Okanogan		1,886.40			9,585.60	
Pacific	2,706.58	11,120.03	120.00	5,359.60	738.62	2,965.80
Pierce	8,016.05	4,357.83				1,110.10
Skagit	1,960.00		786.00	6,512.35		
Skamania	7,873.22				3,754.16	1,079.00
Snohomish		958.48	80.00		2,311.38	371.10
Spokane		2,504.97		788.23		1,950.00
Stevens	12,662.75	16,307.90	11,163.00	18,946.15	3,877.57	53.50
Thurston		3,199.24				2,159.24
Wahkiakum	5,213.70	5,387.98			3,706.70	880.00
Walla Walla						2,645.17
Whatcom			1,512.23		7,203.09	1,910.90
Whitman						1,160.00
Yakima		20,484.19	11,107.11	11,845.04	1,350.40	217.25
Totals	75,275.71	199,076.37	86,419.38	78,593.45	81,427.90	39,671.50



RAINFALL MAP OF THE STATE OF WASHINGTON.

RESORUCES, MANUFACTURES AND PROPERTY VALUATION, BY COUNTIES.

As elsewhere stated, under the law, it shall be the duty of all state officers and the assessors of the various counties of the State to furnish the Commissioner of Statistics all of the data in their power, upon his request, from which this Bureau must compile its report. The value of every department's report is commensurate with the degree of its accurateness, and should errors occur, they should be of so trivial a nature as not to impair its usefulness. All of the state officers have promptly responded to requests for information, but, as before stated, the assessors in a majority of counties have failed to respond. While the law is mandatory, there is no penalty attached, and many of these officers seem to have been impressed with the idea that this request for necessary data was imposing an onerous burden upon them; consequently they failed to respond. If discrepancies or omissions occur, let the onus lodge where it properly belongs, as this Bureau is not responsible for the failure of the various officers to discharge the duties imposed upon them under the law.

We confidently assert, however, that if there are errors or omissions appearing in this report, it is in not describing the full magnitude, amount and value of the resources of the various counties.

ADAMS COUNTY.

The area of Adams county is 2,400 square miles; population, 4,840; county seat, Ritzville. The Northern Pacific Railroad passes diagonally across the county from northeast to southwest, while the O. R. & N. crosses the southern part of the county, thus affording ample transportation facilities. The soil is mostly a volcanic ash of good depth, varying from one foot to two hundred feet. It is very rich, and produces all kinds of small grains and vegetables in abundance. Apples, pears, prunes, plums, apricots and berries thrive in all parts of the county. Stock

raising is an important industry. The most important industry at present is the production of wheat. Although a considerable portion of the land is arid, more and more of it is being opened up each year to the raising of the great staple. The rainfall has increased of late years on account of the increased irrigation and consequent vegetation. In time the county will in all probability be almost entirely devoted to the raising of wheat.

In the northeast corner of the county there is a considerable body of water, known as Colville lake, which constitutes an immense reservoir, being situated in an elevated basin, and is available for irrigating a large tract of land. When this has been fully utilized, as it surely will be, the value of the county for agricultural purposes will be materially enhanced.

There are forty-eight school houses in the county, and a total valuation of school property of $44,225.

The total valuation of real property, including improvements, except railroad improvements, as shown by the report of the county board of equalization, is $2,039,464.

	No.	*Value.*
Horses and mules	9,238	$140,585
Cattle	7,358	104,170
Sheep	20,132	36,005
Totals	36,728	$280,760

Ritzville is the county seat, situated on the Northern Pacific Railway; population, 761; has a good public school, with five teachers. Of the seven churches in the county, four of them are in Ritzville, *i. e.*, the Christian, Lutheran, Methodist and Congregational.

Other towns in the county are Paha, Bemis, Fletcher, Griffith, Hatton, Lind and Washtucna.

ASOTIN.

Asotin county has an area of only 640 square miles, and lies in the southeast corner of the State; population, 3,366; county seat, Asotin, situated at the junction of Asotin creek and Snake river. Asotin creek divides the county in halves, and together with the Snake river, which is its eastern boundary, furnishes plenty of water for irrigating purposes. In the southern portion of the county a spur of the Blue mountains furnishes an abundance of timber and makes an important addition to the resources of the county. The general surface of the county is level, but

traversed by deep canyons. The only means of transportation so far is by boat down the Snake river to Riparia, where connection is made with the O. R. & N. Railroad. Farming is the chief industry, and along the creek and river bottoms fruit growing is rapidly assuming large proportions as a leading industry. Apples, pears, peaches, apricots and cherries are produced, of a quality to compare favorably with any locality in the State. The first orchard in the county was planted by Red Wolf, a chief of the Nez Perces Indians, from sprouts given him by Rev. Henry H. Spalding, the pioneer missionary sent out by the American Board in 1836 with Dr. Marcus Whitman. The orchard is still flourishing, and bears heavy crops of apples every year.

There are twenty-seven district schools in the county, two of which are graded, and a total valuation of school property of $21,370. Of churches there are eight—one Episcopal, one Advent, one Christian, three Methodist and two Presbyterian.

The total valuation of real property, including improvements, according to the assessment rolls, is $870,655. Total valuation of personal property, $366,369.

	No.	*Value.*
Horses and mules	5,062	$66,138
Cattle	7,762	102,628
Sheep	16,426	32,912
Hogs	2,132	4,588
Totals	32,382	$206,216

Asotin, the county seat, is on the Snake river. From this point shipments of grain, fruit and live stock are made. There is a good graded school and three churches. The population is 774.

Other towns are Anatone, Silcott and Theon.

CHEHALIS.

Chehalis county is situated in the southwestern part of the State, bordering upon the Pacific ocean, and embraces within its boundaries what is known as the Grays Harbor country. Its area is about 2,600 square miles; population, 15,124. The county is traversed from east to west by the Chehalis river, which is navigable for a long distance. There are numerous streams within the boundaries of the county flowing into the Chehalis river and Grays harbor, the valleys of which are fertile, and from which much of the timber has been cleared, and the lands transformed into valuable farming land. The eastern

part of the county is well settled, and represents one of the most flourishing farming communities in the State. The northern part of the county is mountainous, the southern end of the Olympic mountains extending across it.

This county has vast forests of standing timber, consisting of fir, spruce, cedar and hemlock, excelling in spruce and cedar any county in the State. The manufacture of lumber is the chief industry of the county, there being large sawmills located at Aberdeen, Cosmopolis, Hoquiam, Ocosta, and other points.

The soil is rich and the winters mild. The lands, when cleared, constitute the very finest pasture lands, and make this county an inviting field for stock raising and dairying.

The fishing industry is also an important factor in the industrial life of the county. The total value of this industry for the year 1900 of canned salmon, fresh, salt, and smoked fish, and shell fish, from Grays harbor, was $158,648.

Montesano, situated on the Chehalis river at the head of navigation, is the county seat. Population, 1,594.

Aberdeen, on Grays harbor, is the principal commercial center of the county. Its population is 3,747. This place has two or three ship-building plants, a salmon cannery, several shingle mills and sawmills.

Hoquiam is another little city, four miles west of Aberdeen, on Grays harbor, having a population of 2,824. It has two large sawmills, several shingle mills, and other industries.

The Grays harbor cities have regular steamboat connection with San Francisco, Astoria and Portland, as well as local lines operating in the harbor. These cities have banks, churches and civic societies, together with a good system of public schools. There are sixty-four schools in the county. The valuation of all school property in the county is $97,136.

The Grays Harbor branch of the Northern Pacific Railroad extends through the county from east to west, running to Ocosta on the south side of Grays harbor and Hoquiam on the north side of the harbor.

Other towns of importance are Elma, Oakville and Satsop.

The total valuation of real property, including improvements, as returned by the State Board of Equalization, is $6,814,893. The valuation of personal property, as returned by the county board, is $1,161,796.

WASHINGTON STATE REFORM SCHOOL, CHEHALIS, WASH.

	No.	*Value.*
Horses and mules	1,727	$56,861
Cattle	7,266	103,718
Sheep	2,882	5,477
Hogs	1,665	3,653
Totals	13,540	$169,709

CHELAN.

Chelan county was created by an act of the legislature of 1899, and embraces within its borders an area of 2,000 square miles. It has a population of 3,931. The larger portion of the county is mountainous, with more or less timber and a large area of grazing land. It has, however, within its borders the Wenatchee valley, in which a number of irrigating canals have been constructed, utilizing the water of the Wenatchee river to water 25,000 acres of land. The valley is famous as a fruit country throughout the entire Northwest. It is known for the finest orchards and for producing the most perfect fruit of all kinds, including apricots, peaches, grapes, pears, plums and apples, all of which are readily marketed at Puget Sound points, where they enter into competion with California fruits. Hundreds of tons are also shipped to Montana, Dakota and Minnesota points, and even as far east as Chicago, over the Great Northern Railway. Vegetables of all kinds grow to perfection, including melons, sweet potatoes and peanuts. The soil and climate are also favorable for the successful culture of tobacco. There are besides the Wenatchee valley numerous other small valleys in the county suitable for agriculture and fruit growing.

Lake Chelan, a picturesque and navigable sheet of water, fifty miles long and from one to four miles wide, which lies in the northern part of the county, is becoming noted as a summer resort. Fishing, hunting, choice water and magnificent mountain scenery are its attractive features.

The county seat of the county is Wenatchee, located on the Columbia river, and on the line of the Great Northern Railway, which traverses the county from east to west through its entire length. This line of railroad has done much toward the development of the county. It is understood that the Great Northern Railway will build a branch line from Wenatchee along the Columbia river northward through the county to the mining districts of Okanogan county. The population of Wenatchee is 1,157.

Other towns of considerable importance are Leavenworth, a railway division point, and Mission, a fruit shipping station.

There are twenty-eight public schools in the county. The valuation of school property is $28,300.

The assessed valuation of real property, including improvements, is $455,038, and of personal property $408,533.

	No.	*Value.*
Horses and mules	1,812	$38,031
Cattle	2,847	48,327
Sheep	2,911	5,800
Hogs	764	2,140
Totals	8,334	$94,298

CLALLAM.

Clallam county lies in the northwesterly corner of the State. It is bounded on the north by the Straits of Juan de Fuca, and on the west by the Pacific ocean. The county has an area of 2,000 square miles more or less. Its population is 5,603. Its topography is largely mountainous, being densely covered with timber. The timber is mainly fir, cedar, spruce and hemlock, but there is some larch, Alaska cedar and white pine on the slopes of the Olympic mountains. The soil upon which these forests are standing is a rich alluvial, and when cleared will make good agricultural, pasturage and fruit land. There are numerous small streams flowing into the straits, along which there are fertile valleys, and from Port Angeles eastward to the boundary there is a wide belt of excellent agricultural land. The valleys of the Quillayute river and its tributaries flowing into the Pacific ocean are rich agricultural land. Upon all of these lands the products common to Western Washington flourish. There are many fine farms in the county, and a vast area is still open for development.

The principal industry of the county is lumbering. Fishing is also extensively carried on, there being great quantities of halibut caught on the Flattery banks. Food fishes of all kinds, including shell fish, are abundant.

A good quality of coal has been discovered in the county, and in the Olympic mountains ledges of gold, silver and other metals are known to exist, but as yet prospecting has not been carried on to any great extent, and the mines are undeveloped.

Port Angeles is the county seat of the county, and is situated on a beautiful land-locked harbor, about sixty miles from the

ocean, on the Straits of Juan de Fuca. It has a population of 2,321.

There are thirty-seven district schools in the county. The valuation of school property in the county is $59,299.

The valuation of real property in the county, as assessed by the State board, is $2,364,541, and of personal property as assessed by the county board, $224,379.

	No.	*Value.*
Horses and mules	908	$25,701
Cattle	3,521	49,828
Sheep	2,493	4,768
Hogs	567	1,374
Totals	7,489	$81,166

Other towns than the county seat are Dungeness, the former county seat; Port Williams, Clallam, Crescent, Pysht, Quillayute and Tatoosh.

CLARKE.

Clarke county is located in the southern part of the State, on the Columbia river. It has an area of 600 square miles and a population of 13,419. A large portion of the county consists of rich alluvial bottom and bench lands, and is consequently quite level, until you approach the Cascade mountains in the north, when the surface becomes rolling and broken. It contains large areas of grain-producing prairies and bunch grass land, well adapted for agriculture and grazing. Wheat, oats, flax and barley are sure and successful crops, and garden vegetables of all kinds yield bountifully. Horticulture and fruit growing is the chief industry of the county. Apples, pears, prunes, peaches and all small fruits are raised with great success. This county is noted for the great quantity of prunes produced and shipped each year, the output exceeding for a single year's shipment one hundred carloads. There are a large number of dairies and cheese factories in the county, using the milk from 10,000 cows, with an output of 100,000 pounds of butter and 200,000 pounds of cheese.

Vancouver is the county seat, situated on the north side of the Columbia river, 100 miles from the ocean. It has a population of 4,006. The State School for Defective Youth is located here. It is also the location of the United States army post, Fort Vancouver, and of a United States land office. It has a high school, four public school buildings; one academy, under the auspices of the Episcopal church; the College of the Holy

Angels, for boys; a convent school, maintained by the Sisters of the House of Providence. The city is provided with banks, churches of several denominations, lodges of the various fraternal societies, three newspapers; has several large saw mills and various other manufacturing institutions, as well as electric lights and a street car system.

There are eighty-one public schools in the county, seven of which are graded. The total valuation of school property in the county is $95,238. There are twenty-four churches in the county, as follows: Three Congregational, six Roman Catholic, twelve Methodist Episcopal, one Episcopal and two Baptist.

The assessed valuation of real property in the county, including improvements, is $3,533,115, and of personal property is $541,485.

	No.	*Value.*
Horses and mules	2,598	$61,095
Cattle	8,065	137,090
Sheep	1,258	2,440
Hogs	1,766	3,085
Totals	13,687	$203,710

Other towns than the county seat are Amboy, Etna, Hayes, Hopewell, La Camas, Ridgefield and Vancouver Barracks.

COLUMBIA.

Columbia county has an area of 830 square miles, and a population of 7,128. The greater portion of the county is a rolling plain, with a deep soil of volcanic origin. The Blue mountains occupy the southern portion of the county, and afford a large supply of merchantable timber. The O. R. & N. and the W. & C. R. Railroads afford transportation for the products of the county. Columbia is one of the greatest wheat producing counties. Other crops, however, such as oats, barley, corn, flax, sorghum and potatoes, do equally well and do not require irrigation. Even where the land has been put to crop for twenty or thirty years, it shows no sign of diminishing fertility.

Fruit of a superior quality grows in abundance, and is a source of considerable revenue. New orchards are being constantly added, and there is a large acreage in fruit trees, which promises soon to make the county among the foremost in the State as a fruit shipper. While wheat raising will probably always remain the great industry of the county, the farmers are

turning their attention to stock raising and fruit growing with favorable results.

The climate of Columbia county is equable and very healthful. The extremes of temperatures are not disagreeable; the warmth of summer is tempered by cool breezes, and the nights are always cool. The winters are short, and usually very mild.

There are forty-eight schools in the county. The valuation of school property is $57,980.

The valuation of real property, including improvements, as returned by the board of equalization, is $2,632,777. Valuation of personal property, $893,020.

	No.	*Value.*
Horses and mules	7,480	$130,205
Cattle	6,474	94,645
Sheep	21,725	37,955
Hogs	3,016	5,655
Totals	38,645	$268,560

Dayton is the county seat. It is situated on the Touchet river, and has the advantages of two railroads, the W. & C. R. and the O. R. & N. It has a population of 2,216. The city is lighted by electricity, has an excellent water system, a fire department, four weekly papers, eight churches, a splendid central school building, and a number of flour, feed and chop mills, foundries, sawmills, a brewery and two national banks.

Other towns are Huntsville, Marengo, Alto, Covetts, Perry, Riparia and Starbuck.

COWLITZ.

Cowlitz county lies in the southwestern part of the State, on the Columbia river. Kalama is the county seat, and the population is 7,128; and the area is 1,100 square miles. The county is principally mountainous, interspersed with valleys, such as those of the Cowlitz, Lewis and Kalama rivers. There are large areas of bottom land along the valleys in which the soil is a rich alluvial, well adapted to the raising of grass, grain, all kinds of vegetables and fruit. There are many fine orchards in the Cowlitz and Lewis valleys, bearing prunes, apples, pears, cherries and plums.

Large quantities of coal await development near the towns of Kelso and Castle Rock. It is of a bituminous character. In the mountains a low grade of quartz, bearing gold, silver and copper, has been found in paying quantities, and some development work

has been done. Logging is carried on extensively along the Cowlitz river and Ostrander and Coal creeks. Salmon fishing and packing are important industries.

In addition to the transportation facilities afforded by the Columbia river, the Northern Pacific Railroad crosses the county from north to south.

There are sixty district schools in the county. The valuation of school property is $40,164.

The total valuation of real property in the county is $2,534,518. The valuation of personal property is $414,757.

	No.	*Value.*
Horses and mules	1,743	$43,392
Cattle	6,898	81,648
Sheep	1,822	2,369
Hogs	1,615	2,278
Totals	11,078	$129,687

Kalama, the county seat, is situated on the Columbia river, about forty miles below Portland. It is the point on the Washington side from which the Northern Pacific trains are ferried across the Columbia river. It has a number of sawmills, a bank, several churches, good schools, a weekly newspaper, and a population of 945.

Other towns are Caples, Castle Rock, Freeport and Kelso.

DOUGLAS.

Douglas county is situated in the central part of the State, and is about two-thirds enclosed by the Columbia river. Its area is about 4,500 square miles, and it has a population of 4,926.

The Grand Coulee and the Moses Coulee are topographical features that attract widespread attention for their scenic ruggedness and beauty. The eastern part of the county is a high, almost level plateau, between one thousand and two thousand five hundred feet in elevation. Here the climate is mild and the moisture provided by nature sufficient to raise crops without irrigation. All of the cereals and vegetables of the temperate zone flourish on this plateau, making it a splendid farming country. On the lowlands of the southern portion of the county large herds of cattle and horses graze, the country being almost entirely given over to the raising of stock. When these lowlands have been given the advantage of irrigation, the products will partake

of a semi-tropical character, on account of the mildness of the climate. The Great Northern Railroad crosses the county, affording a means of marketing the products of the county.

In the vicinity of Wilson Creek and Adrian there are several miles of irrigation ditches, which were promoted originally by Seattle people, but it is understood that the Great Northern Railway has acquired these interests, which assures the successful completion and operation of the same. This will make another garden spot along the line of that road, which has done so much for the development of the country through which it passes.

There are forty-seven school districts in the county, of which one is graded. The valuation of school property is $44,574. There are eight churches in the county, as follows: One Roman Catholic, two Methodist, one Presbyterian, one Baptist, one Christian, one Lutheran, one Church of God.

The assessed valuation of property in the county, including improvements, is $1,737,872. Value of personal property, $961,461.

	No.	*Value.*
Horses and mules	11,762	$165,749
Cattle	15,952	247,648
Sheep	10,848	19,036
Hogs	1,807	5,533
Totals	40,369	$437,961

Waterville, the county seat, is situated in the northwestern part of the county, about six miles east of the Columbia. It is connected with Wenatchee and Coulee City by stage line, but has no railroad communication with the outside world. It has a saw mill, bank, graded school, several churches, and three weekly papers. Its population, according to the last census, was 875.

Other towns in the county are Barry, Coulee City, Wilson Creek, Ephrata and Adrian.

FERRY.

Ferry county was created by an act of the legislature of 1899. It embraces all that portion of what was formerly Stevens county lying west of the Columbia river, and is entirely within the original boundaries of the Colville Indian Reservation. Its population is 4,562. The county is mountainous, and its chief industry is mining, it having within its boundaries the Curlew, Kettle River, Eureka and San Poil mining districts. Owing to

the lack of transportation, there are no shipping mines, but development has been carried on sufficiently to establish their great richness. There is some timber in the county, and large areas of bunch grass land, suitable for grazing, with small areas along the rivers and streams that are suitable for agriculture; and no doubt as the country is developed stock raising will become one of the industries of the county.

There are three public schools and a total valuation of school property of $22,150.

The assessed valuation of real property in Ferry county is $1,638,308 and of personal property is $224,683.

	No.	*Value.*
Horses and mules	572	$15,871
Cattle	303	6,250
Hogs	41	689
Totals	916	$22,810

The county seat is Republic, named after the Republic mine. It is a flourishing little city, having a population of 3,318. It has a bank, schools, churches and fraternal societies, and with the development of the mines will become an important mining center. Railroad connection will be established in the near future. The Great Northern Railroad Company has now under construction a branch line running from Marcus, a station on the Spokane Falls & Northern, to Republic. It is also expected that a branch line will be extended westward through Okanogan county by the way of Bonaparte creek, connecting with the branch to be built from Wenatchee to the international boundary.

Other towns in the county are Keller, Curlew and Nelson.

FRANKLIN.

Franklin county lies between Adams county and the Snake river, and has an area of 1,224 square miles, with a population of 486. The soil is of a volcanic sedimentary deposit, and is covered with sage brush and bunch grass. In some parts of the county the rainfall and heavy dew provide sufficient moisture for the successful growing of wheat and other grains, but over the greater area there is need of irrigation to make the soil productive. Along the river, where water can be had, under irrigation, there are splendid fields of alfalfa and fine fruit orchards.

A branch of the O. R. & N. Railway runs through the northern part of the county and the Northern Pacific main line passes through the county from north to south

GLIMPSE AT A WENATCHEE VINEYARD.

There are four schools in the county. The valuation of school property is $4,327. The assessed valuation of real property and improvements is $289,037 and of personal property is $253,847.

	No.	*Value.*
Horses and mules	5,842	$22,941
Cattle	454	5,693
Sheep	33,150	58,012
Hogs	22	59
Totals	39,468	$86,705

Pasco, the county seat, is the only town of any size in the county. It is a division point of the Northern Pacific Railway. It has a population of 274.

GARFIELD.

Garfield county is in the southeastern part of the State, and has an area of about 672 square miles. It is irregular in shape, and has the Blue mountains in its southern portion and the Snake river along its northern and eastern borders. Its population is 3,918.

The land of the county is mostly rolling prairie until the Blue mountains are reached, where an abundance of timber for building purposes is found. The soil is rich, and adapted for the raising of all kinds of fruits, vegetables and grain. Wheat is the grain which receives the greatest amount of attention, and is the backbone of the industry of the county. The yield per acre on summer fallowed land often runs up to fifty bushels for wheat, and from fifty to eighty bushels per acre of oats and barley. No irrigation is required in this county, as the rainfall is sufficient to insure good crops annually.

There are facilities for transportation by way of water on the Snake river, and by rail over a branch of the O. R. & N.

The number of schools in the county is thirty-six. The value of all school property in the county is $48,627.

The assessed valuation of the real property and improvements in the county is $1,325,025. The assessed valuation of personal property in the county is $519,400.

	No.	*Value.*
Horses and mules	6,289	$97,790
Cattle	7,147	88,560
Sheep	10,977	19,095
Hogs	2,157	4,440
Totals	26,570	$209,885

Pomeroy, the county seat, is a place of about 953 people. It is the terminus of the branch line of the O. R. & N. Ry., has several churches, a graded school system and high school.

Other towns are Pataha City, Ping, Mayview and Gould City.

ISLAND.

Island county is composed of the islands of Whidby and Camano, and is located about the center of Puget sound, lying across the head of the Strait of Juan de Fuca. The area of Whidby island is 115,000 acres and of Camano 30,000 acres, making a total area for the county of 145,000 acres of land. The population of the county is 1,870. Whidby is forty miles long, varying in width from one to ten miles, and forms the division between the two principal channels of the upper Sound. Camano is twelve miles long and from one to six miles wide. It lies east of the central portion of Whidby island. Both islands are heavily timbered with fur, cedar, hemlock, spruce and alder. There are a few thousand acres of prairie and swamp lands, upon which splendid crops of wheat, barley, oats, hay, fruit and garden vegetables are raised. The timbered uplands are not so well adapted as the lowlands for the production of vegetables and grain, but for fruit they are unexcelled. Some of the oldest orchards in the State are located on Whidby island, and they have contributed a large proportion of the supply of domestic apples to the Sound markets for more than thirty years. Extensive young orchards of prunes, pears, cherries, apples and berries have been set out in recent years, and the acreage devoted to fruit raising is increasing year by year. The county has a location that makes the markets of the most important cities of the Sound of easy access, and insures its future as a fruit-growing and agricultural district of large possibilities.

The assessed valuation of real property on the island, including improvements, is $974,876, and of personal property is $121,489.

There are fourteen public schools in the county. The valuation of school property in the county is $9,611.

	No.	*Value.*
Horses and mules	656	$24,670
Cattle	1,683	24,552
Sheep	2,003	4,007
Hogs	669	1,513
Totals	4,961	$54,712

Coupeville, the county seat, is on the east side of Whidby island, about sixty miles north of Seattle. It is in daily communication with all Sound points by steamers. There are two saw mills, three churches, good schools, and a number of fraternal societies. It has a population of 495.

Other towns are Langley, Oak Harbor, Useless and Utsalady.

JEFFERSON.

Jefferson county lies to the west of Puget sound, at the head of the Straits of Juan de Fuca. It has an area of 2,000 square miles, and a population of 5,712. Like all of the Puget Sound counties, it abounds in great forests of fir, spruce and cedar timber. The county extends westward from Hood's canal to the Pacific ocean, being divided by the Olympic range of mountains. That portion lying west of said mountains on the Pacific slope contains many millions of the finest timber, which is as yet untouched.

Lumbering is at present the principal industry of the county, but the fishing industry, agriculture and manufactories are increasing in importance, and the mining interests of the county, which are as yet undeveloped, will in time prove a source of wealth. Large and valuable deposits of iron ore, and ledges of the precious metals, are known to exist in the Olympic mountains.

There are three dairies and cheese factories in the county, with an output of 124,840 pounds of butter and 53,706 pounds of cheese. The county also has one cannery, with an annual output of 40,000 cases of canned fish.

There are twenty district schools in the county, two of which are graded. The total value of school property is $192,780. In all there are twelve churches in the county, as follows: One Congregational, one Roman Catholic, two Methodist Episcopal, one Episcopal, two Baptist, two Presbyterian, one Christian, one Christian Science.

The assessed valuation of all real property in the county, as assessed by the state board, is $1,815,103; and of personal property, $267,848.

	No.	*Value.*
Horses and mules	536	$11,275
Cattle	2,204	35,200
Sheep	613	1,226
Hogs	461	1,331
Totals	3,814	$50,032

Port Townsend, the county seat of the county, is the port of entry of the Puget Sound collection district, and the site of the United States marine hospital. The city has various manufacturing establishments, sawmills, foundries, electric light, street car service, telephone system, and a full representation of churches and fraternal organizations. Being at the entrance to Puget Sound, the city is commanded by the fort at Point Wilson, Fort Alger, on Marrowstone Point, and Fort Casey, at Admiralty Head, all of which are supplied with the most modern guns of the disappearing type, and designed to prevent the entrance to the sound of a hostile fleet in time of war.

Other important towns in the county are Hadlock, Center, Port Discovery, Port Ludlow and Pleasant Harbor.

KING.

King county is about the center of the Puget Sound country, being bounded by the Sound on the west and extending eastward to the Cascade mountains. It has an area of approximately 2,000 square miles, with a population of 110,053. Like all of the Puget Sound country, the county was originally heavily timbered, and the eastern portion of it is still covered with vast tracts of timber as yet untouched. There are numerous fine valleys within its borders of great fertility, which are well improved — notably the Duwamish, White river and Snoqualmie valleys, in which are located beautiful towns and villages and numerous productive farms. In the western portion of the county and on either side of the valleys are high lands which have been chiefly valuable for their timber, but when cleared are well adapted for the cultivation of fruit, vegetables and farm produce, and make the finest of grazing lands. The products of the county are timber, coal, hay, hops, potatoes, live stock, fruit, and fish of numerous varieties.

The industries are lumbering, coal mining, hop raising, agriculture, dairying, and numerous kinds of manufactories. Coal mining has been a leading industry in the county for many years. Millions of tons have been taken from the mines and used to supply the domestic market as well as to supply fuel for the hundreds of vessels entering the Sound, and also for shipment to other points. The estimated output of coal for the year 1900 was 867,204 tons.

Large deposits of iron ore are said to exist in the mountainous portions of the county, and it has within its borders the Miller River, Money Creek and Buena Vista mining districts, in which numerous ledges have been discovered carrying copper, gold and silver. Many of these mines no doubt with development will prove to be most valuable possessions.

Another profitable and growing industry is the development of the agricultural resources, stock raising and dairying. The dairy output for the year 1900 was as follows: Number of dairies in the county, 12; amount of milk received, 3,388,938 pounds; butter manufactured, 772,068 pounds.

The county is well supplied with railroads, having two transcontinental lines, the Northern Pacific and the Great Northern, with numerous local lines, having an aggregate mileage of more than three hundred miles.

Vashon, one of the large islands of Puget Sound, comes within the boundaries of King county. It is well populated, having several hundred people, who are mainly engaged in agricultural pursuits. It is also the site of Vashon College, an educational institution carried on under the auspices of the Baptist denomination.

The fishing industry has for years been a source of large income, and it should be classed as one of the leading industries.

There are 151 public schools in the county, of which nineteen are graded. The total valuation of school property in the county is $1,134,622. There are 107 churches in the county, as follows: Congregational, 19; Roman Catholic, 8; Methodist Episcopal, 20; Baptist, 21; Presbyterian, 11; Episcopal, 7; Christian, 2; Lutheran, 7; miscellaneous 12. There are, besides the State University and Vashon College, a number of Catholic schools, such as the Academy of the Holy Name; Ross Seminary, under the auspices of the Free Methodists, and a number of business colleges. There are also three hospitals.

The assessed valuation of real property in the county, including improvements, is $44,282,430, and of personal property is $7,962,691.

	No.	*Value.*
Horses and mules	5,845	$178,769
Cattle	13,597	232,869
Sheep	3,110	6,157
Hogs	2,406	9,597
Totals	24,958	$427,392

Seattle.

Seattle is the county seat of King county. It is located on Elliott bay and extends eastward to the shores of Lake Washington, and embraces within its boundaries Lake Union and Green lake. It is the largest city in the State, having a population, as shown by the federal census, of 80,671, and it is confidently asserted by many of her leading business men and commercial bodies that she now has a population of not less than 95,000. The State University is located here upon a beautiful tract of 355 acres, between Lake Union and Lake Washington, fronting on both in the north end of the city. A branch of the United States mint is located in Seattle, and the regimental army post, named Fort Lawton, which, when completed, will be a fine modern military establishment. This fort will have, in addition to the regular garrison buildings and grounds, several large guns for defensive purposes. It is so situated that it will command the entrance to the upper Puget Sound and afford protection to the cities in the event of war.

The government canal connecting Puget Sound with Lakes Union and Washington, is mainly within the limits of the city. This canal is now in process of construction, and when completed it is proposed to have a depth of thirty-one feet, with a lock 1,000 feet long and 100 feet wide.

The United States Circuit and District Court for the district of Washington, northern division, is located here.

Seattle is a sub-port of entry, and has the United States land office for the district embracing the northwestern portion of the State. The business of the government at this point is so extensive that Congress has appropriated the sum of $750,000 for a government building to be erected.

The city has numerous manufacturing establishments, consisting of sawmills, factories, grist mills, foundries, machine shops and ship-building plants, the Moran Bros. Company having recently contracted with the government to build one of its new battleships. There are numerous wholesale houses and general supply stores, and in every sense Seattle may be said to be a modern commercial city.

It has first-class daily and weekly papers; 100 miles of street railway, a two million dollar water system, furnishing to its people the finest of water from Cedar river, a clear mountain stream.

Its bank deposits aggregate seventeen million dollars, and its bank clearances about eleven million dollars per month. There are regular lines of steamers between her port and the ports of China, Japan, Alaska, San Francisco, and in the coastwise trade, and many smaller vessels engaged in the Puget Sound traffic make her wharves their home and point of departure.

BALLARD is a flourishing little manufacturing city, situated on Salmon bay, adjoining the city limits of Seattle, and having a population of 4,568. It is connected with the city of Seattle by electric lines, and has quite a number of large sawmills, shingle mills and sash and door factories, producing the largest number of cedar shingles of any point within the State.

Other flourishing towns within the county are Kent, Auburn, Issaquah, Kirkland, Renton, Franklin, Newcastle, Bothell, Black Diamond, Enumclaw, Fall City, Snoqualmie, Tolt and North Bend.

KITTITAS.

Kittitas county lies near the geographic center of the State, and is bounded on the east by the Columbia river and on the west by the Cascade mountains. Its area is about 2,000 square miles, and it has a population of 9,704. It contains a vast area of fine grazing lands, fine forests of merchantable timber, natural hay meadows, and every facility, natural and artificial, to make it one of the greatest stock raising and dairying counties in the State. Irrigation has been carried on to a greater extent in this county than in any of the Eastern Washington counties, there being a large number of splendid irrigating canals conveying water from the Columbia and other streams to the land, which needs only the moisture to make it most fertile.

There are six creameries in the county, receiving for the year 1900 a total of 8,512,786 pounds of milk, from which 477,576 pounds of butter was manufactured. This places Kittitas county second only to King county as a dairying county.

There are a number of promising mining districts, located within the borders of the county, notably the Swauk placer mining district, twenty-five miles north of Ellensburg. This district also abounds in rich ledges of free-milling quartz, carrying gold and silver. Further north are the Peshastin mines, which consist of free-milling quartz ledges carrying gold. For smelting ore it is only necessary to go to the Cle Elum and Fish Lake

mining districts, lying to the northeast of the Swauk district, where galena and low grade copper in large quantities are to be found.

The Northern Pacific Railroad traverses this county from southeast to northwest. The great coal mines at Roslyn are owned and operated by this railroad company, and are a source of considerable wealth.

On the slopes of the Cascade mountains, which form the western boundary of the county, there are many million feet of fir, pine, cedar, larch and Alaska cedar.

There are thirty-six public schools in the county, of which four are graded. The valuation of school property in the county is $92,999. There are sixteen churches in the county, as follows: Congregational, 1; Roman Catholic, 1; Methodist Episcopal, 3; Presbyterian, 3; Christian, 2; Baptist, 2; Episcopal, 2; Colored Baptist, 1; Colored Methodist, 1.

The total valuation of real property, including improvements, in the county is $2,287,927, and of personal property is $1,081,668.

	No.	*Value.*
Horses and mules	4,579	$104,396
Cattle	12,170	221,261
Sheep	30,035	58,908
Hogs	2,244	7,157
Totals	49,028	$391,722

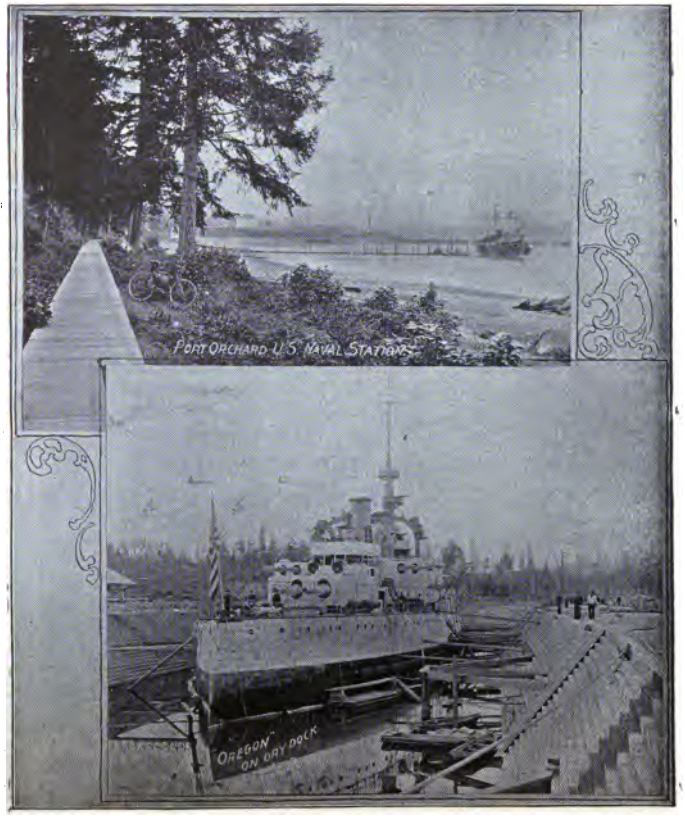
The county seat of the county is Ellensburg. It is situated on the Yakima river, on the line of the Northern Pacific Railway. It has an electric light plant, a street railway system, rolling mills, sash and door factories, saw mills, a foundry, planing mill, two banks, three weekly newspapers, several churches and fraternal societies, and an excellent public school system, with a high school. One of the state normal schools is located here, and has an attendance of from two to three hundred students. The population of Ellensburg is 1,737.

Other towns in the county are Cle Elum, Roslyn, Teanaway and Peshastin.

KITSAP.

Kitsap county belongs to the western tier of counties, and comprises the peninsula between Hood's canal and Admiralty inlet and Bainbridge and Blake islands. It has an area of 400 square miles and a population of 6,767.

The county is penetrated in all directions by different arms



U. S. Ship Oregon in Dry Dock.

Dry Dock and Officers' Quarters.

PUGET SOUND NAVY YARD

of Puget sound, and has within its limits Port Orchard bay, Port Washington bay and Dog Fish bay, all fine land-locked harbors. Port Orchard has secured the United States naval station and the largest and finest dry dock on the Pacific Coast, where the heaviest battleships in the navy have been successfully docked and repaired. The county has also some of the largest saw mills in the State. The Port Blakeley mills are second only to the St. Paul & Tacoma Lumber Company's plant for the distinction of being the largest saw mill in the world. The mill at Port Gamble has also an enormous capacity. There are a number of other large mills in the county, which, with the two large mills just mentioned, make it one of the chief lumber manufacturing counties in the State.

Aside from lumbering, which constitutes the main source of wealth of the county, the soil when cleared affords ample opportunity for raising fruit and general farm produce, yielding bountiful returns. As the timber disappears, orchards take its place, and the farm will soon have supplanted the logging camp. Oyster culture is progressing favorably at the state experiment station, located at Keyport, where the eastern oyster has been transplanted. There are also valuable beds of the native oyster to be found within the limits of Kitsap county, and good opportunities are presented for capitalists to develop the industry in a way that will be highly profitable to themselves and add much to the resources of the county.

There are forty-six schools in the county. The valuation of school property is $27,465.

The assessed valuation of real property in the county, including improvements, is $1,823,816, and of personal property is $395,917.

	No.	*Value.*
Horses and mules	711	$15,159
Cattle	2,336	32,615
Sheep	613	919
Hogs	441	1,114
Totals	4,101	$49,807

Sidney, the county seat, is seven miles west of Seattle, across the Sound. It is a flourishing town of 594 population. Among its industries it numbers three saw mills, a terra cotta and sewer pipe works, and a number of shingle mills. It has two churches, a weekly newspaper and a bank.

Other towns of the county are Bremerton, Colby, Port Madison, Port Blakeley, Port Gamble and Tracyton.

KLICKITAT.

Klickitat county is in the south central part of the State, and has for its southern boundary the Columbia river, and lies between Walla Walla county on the east and Skamania county on the west. It has an area of nearly three thousand square miles, a population of 6,407, and a river frontage on the Columbia of 120 miles. The county is watered by numerous streams which flow into the Columbia, whose valleys are very fertile, producing cereals, vegetables and fruits. The northern and western portions of the county are somewhat mountainous, and covered with fir, pine, spruce and hemlock timber, which is of a marketable quality. More than one-half of the land in the county is susceptible of cultivation, and the rest is splendid grazing land. In the western part of the county Camas prairie is located. It is noted for its fine grasses, cattle and dairies. The soil of this prairie is a black, sandy loam, and is very productive. The principal crops are wheat, oats, barley, rye, and timothy on the bottom lands. There is one creamery in the county which received during 1900, 374,400 pounds of milk and manufactured 4,493 pounds of butter and cheese.

Apples, pears, plums, prunes, crab apples and cherries grow in abundance, and along the Columbia river peaches, apricots and grapes grow in great perfection. No irrigation is needed to produce any kind of crops in the county.

The assessed valuation of real estate in the county is $1,663,234, and of personal property, $806,194.

There are fifty-three public schools in the county. The total valuation of school property is $27,710.

	No.	*Value.*
Horses and mules	7,339	$143,209
Cattle	9,778	151,767
Sheep	65,884	115,113
Hogs	4,681	13,578
Totals	87,682	$423,667

Goldendale, the county seat, is situated on the Little Klickitat river, which furnishes a cheap and effective power for the mills of various kinds located in the city. The place has a population of 738. It has banks, churches, a good public school system, and is the location of a flourishing private academy.

There are two weekly papers in the place, and a number of fraternal organizations. It is the distributing point for a large stock raising and farming region.

Other towns of importance in the county are Bickleton, Centerville, Pleasant, Trout Lakes and White Salmon.

LEWIS.

Lewis county is located in southwestern Washington, about midway between the Columbia river and Puget Sound. It has an area of over 2,000 square miles, and a population of 15,157. Like all Western Washington counties, the greater portion of the county was formerly covered with dense forests of timber, which constitutes its greatest natural resource, although with development its coal no doubt will prove of great commercial value, as that commodity is said to exist in most every part of the county, and it is claimed that a fine quality of bituminous coal, as well as anthracite, is found in the eastern and mountainous portions of the county. Lumbering is carried on extensively in the county, and it has a vast area of agricultural lands. The Chehalis river valley spreads over the central and western portions of the county, in which are to be found many magnificent farms, producing abundant crops of oats, hops, hay and potatoes. Considerable wheat is grown in this county, which crop yields well and is of a good quality. There are many large orchards, which produce the finest varieties of apples, prunes, pears, cherries and the small fruits. The Cowlitz river basin covers the eastern and southern portion of the county, and it is said to be, when cleared, the finest of agricultural land, and in this portion of the county the opportunity is offered to those who are willing to work to secure homes at reasonable prices, there still being some vacant land to be had. There are in the eastern and mountainous portions of the county ledges of quartz to be found, carrying the precious metals. None of these, however, are as yet developed. There are several flouring mills in the county, and a large number of sawmills and shingle mills, which, together with coal mining, farming, and the dairying industries, makes this one of the richest and most prosperous counties of the State. There are thirteen dairies in the county, manufacturing in 1900, 87,623 pounds of butter, and 29,107 pounds of cheese.

The main line of the Northern Pacific extends through the county from north to south, and the Grays Harbor branch, leaving the main line at Centralia, extends through the western portion of the county, while the South Bend branch, which leaves the main line at Chehalis, traverses to about its southwestern limits. It will be seen thus that the county is provided with advantageous transportation facilities.

There are 108 public schools in the county, of which eight are graded. The total valuation of school property in the county is $97,869.91. There are two Congregational, five Roman Catholic, nine Methodist, eight Presbyterian and four Baptist churches in the county, making a total of twenty-eight.

The total valuation of real property, including improvements, as assessed by the State board for 1900, is $4,157,619, and of personal property, $627,618.

	No.	*Value.*
Horses and mules	3,585	$83,694
Cattle	12,144	159,313
Sheep	2,676	9,923
Hogs	6,122	9,476
Totals	24,527	$257,406

Chehalis is the county seat of the county, situated on the main line of the Northern Pacific Railroad, and on the Chehalis river, thirty-three miles south of Olympia. It is a flourishing little city, having a population of 1,775. It contains churches of the Methodist, Baptist, Episcopal, Congregational and Presbyterian denominations, a fine school system, with a high school, two banks, a flouring mill, several sawmills, water and electric light plants, weekly newspapers, civic organizations, etc., and is an important shipping point. It is also the location of the State Reform School.

Centralia, another town of considerable importance, is situated about four miles north of the county seat, having a population of 1,600. It has a number of mills, electric and water plants, banks, churches, and a good school system, including a high school. It is also a shipping point of considerable importance.

There are several other towns in the county of more or less importance, of which we might mention Winlock, Pe Ell, Toledo and Napavine.

LINCOLN.

Lincoln county lies between Douglas county on the west and Spokane county on the east, and has an area of about 2,300 square miles. Its population is 11,969. The county is traversed by two great railroads, the Great Northern and the Northern Pacific, as well as two branch lines, so that for facilities of transportation it is well provided. The southwestern portion of the county is comparatively level, but as the Spokane and Columbia rivers are approached numerous ridges heavily timbered with pine and tamarac are encountered. The soil on these ridges is dark, heavy and very fertile. Splendid crops of wheat, oats, barley, rye and other cereals are grown yearly. Vegetables of all kinds and the hardier fruits grow in great abundance. About two-thirds of the county may be called agricultural land and the other one-third denominated as timber, grazing and mineral land.

Among the industries which are beginning to assume considerable importance are packing houses, cheese factories and creameries. In the year 1900, 357,901 pounds of milk came to the creameries and 14,316 pounds of butter was manufactured, and of cheese 12,587 pounds was manufactured.

The valuation of school property in the county is $70,700.

The valuation of all real estate in the county, including improvements, as returned by the state board of equalization, is $4,852,046, and of personal property is $1,596,219.

	No.	*Value.*
Horses and mules	15,191	$343,316
Cattle	13,853	188,055
Sheep	2,015	3,260
Hogs	3,630	11,224
Totals	34,689	$545,855

The county seat of the county is Davenport, situated on the Washington Central, a branch of the Northern Pacific Railway. It has a number of churches, an electric light plant, water works, an opera house, two weekly papers and a bank. Its population is 1,000.

Other towns are Sprague, Wilbur, Fairview and Harrington.

MASON.

Mason county lies upon the west side of Puget Sound, and covers the southwestern arms of that body of water. It has an

area of 900 square miles and a population of 3,800. Three-fourths of the county's area is rugged and mountainous, and almost the entire surface is covered with a heavy growth of timber, the varieties being fir, cedar, Alaska pine, spruce, maple, alder, ash and cottonwood. It is the pioneer county as far as the logging industry is concerned, but, notwithstanding the fact that many million feet of timber have been removed from its forests, there yet remains a vast quantity of fir and an almost unlimited amount of cedar to be cut. Logging and the manufacture of lumber are the chief industries of the county, although agriculture and fishing are coming to the front rapidly. Mason county is the home of the famous "Olympia oyster," and many thousand sacks of the toothsome bivalves are shipped from its cultivated beds annually. Clams and all kinds of fresh, smoked and salted fish are also shipped in large quantities.

The river valleys are being rapidly cleared and turned into productive and profitable farming lands, which yield immense crops of hay, oats and garden vegetables. Fruit culture is also claiming the attention of the farmers, with gratifying results.

There are forty schools in the county. The valuation of school property in the county is $34,755.

The assessed valuation of all real property in the county, including improvements, is $1,318,788, and of personal property is $153,535.

	No.	*Value.*
Horses and mules	582	$14,050
Cattle	2,209	28,450
Sheep	819	1,468
Hogs	181	334
Totals	3,791	$44,302

Shelton, the county seat of Mason county, is twenty-two miles northwest of Olympia. Its population is 1,353. It has four churches, a graded public school, electric lights, and two newspapers. Its only means of communication at present is by steamboat.

Other towns are Clifton, Grove, Hoodsport and Union City.

OKANOGAN.

Okanogan county is situated in the north central part of the State, and has an area of about 4,300 square miles. The population of the county is 4,689. Its western boundary is the summit of the Cascade mountains, and it has within its borders the valleys

of the Okanogan, Entracto and Methow rivers. To the east of the valley of the Methow, and divided from it by a range of hills running northward, is the valley of the Okanogan river, which embraces about one-third of the county, and extends northward to British Columbia. The tillable land consists of the river bottoms and benches, which are very fertile and produce all kinds of fruit, cereals and vegetables. For the most part, however, the county is mountainous, and its wealth consists chiefly in its valuable mineral deposits, its timber lands and its stock ranges. The varieties of timber are bull pine, fir, cedar, larch, Alaska cedar and tamarac. The foot hills of the Cascades are heavily timbered. The county probably offers the best opportunity to those seeking homesteads or cheap homes of any locality in the State, as considerable government land is still there to be found.

On the Twisp, a branch of the Methow, coal of good quality has been discovered. Near the northern boundary of the county, on Similkimeen river, is the mining district of that name; farther south are the districts of Palmer Mountain, Lime Belt, Conconully, Ruby City and Methow, in all of which valuable ledges of gold, silver and copper have been discovered. When these districts have been tapped by railroad communication, many paying mines will be developed.

There are twenty-six schools in the county. The valuation of school property is $19,899.

The total assessed valuation of real property in the county, as returned by the State Board of Equalization, is $168,117, and of personal property, $564,729.

	No.	*Value.*
Horses and mules	4,930	$79,109
Cattle	9,157	174,834
Sheep	2,098	4,196
Hogs	638	1,634
Totals	16,823	$259,773

Conconully, the county seat, is situated on Salmon creek, about one hundred miles north of Wenatchee, from which point it is reached by Columbia river boats and stage lines. It is a thriving little town, having a sawmill and concentrator. The Great Northern Railroad Company have filed their resolution of intention with the Secretary of State for building a line of road in Chelan county, through Okanogan to the international boundary line. Also from this, a branch line by the way of Boneparte

creek to Republic, the county seat of Ferry county, is contemplated, and it is expected that construction on the same will be commenced within the next year.

Other towns in the county are Alma, Golden, Loomiston, Ruby and Winthrop.

PACIFIC.

Pacific county is the extreme southwest county of the State, and has a population of 5,983, and an area of about 900 square miles. It is bounded on the west by the Pacific ocean, and on the south by the Columbia river. Along the western line of the State, running north from the Columbia river, is a narrow strip of land inclosing Willapa harbor. Nine streams of more or less importance flow into this bay, and on its shores there are dense forests of fine timber handy to market. The soil in these valleys is very fertile, and adapted for the growing of all manner of vegetables and other farm products common to the western part of the State. Hop culture and dairying are among the rising industries. Many hundred acres of tide land have been reclaimed, and produce immense crops of oats and hay. On the peninsula a number of cranberry marshes are being cultivated, with satisfactory results. Oyster culture is another important industry, which furnishes employment for several hundred men during the gathering season. Sixty thousand sacks, worth $90,000, are shipped annually. Lumbering, ship building and fishing are the principal industries of the county.

The Northern Pacific Railroad touches tide water at South Bend and furnishes ample transportation facilities for the county. Prospects of securing petroleum are good, and organizations for the purpose of development are being effected. There are also stratas of fire clay and limestone in the county, which are as yet undeveloped.

There are thirty-eight public schools in the county, of which four are graded. The total valuation of school property is $51,015. There are fifteen churches in the county, of the following denominations: One Congregational, two Baptist, three Roman Catholic, six Methodist Episcopal, two Presbyterian, and one Adventist.

The assessed valuation of property of the county is as follows: Real estate, with improvements, $2,298,646; personal property, $286,520.

WASHINGTON SOLDIERS' HOME, ORTING, WASH

A partial view of buildings and grounds.

	No.	*Value.*
Horses and mules	659	$10,781
Cattle	4,005	42,009
Sheep	949	1,468
Hogs	271	597
Totals	5,884	$54,855

South Bend, the county seat, is eighteen miles from the Pacific ocean, at the mouth of Willapa river. It has a chamber of commerce, electric lights, a number of banks, several churches, two newspapers, a good school system, including a high school; a number of sawmills, a sash and door factory, and other industries. The population, according to the last census, was 711.

Other towns are Bay Center, Fort Canby, Ilwaco (Inc.), Oysterville and Willapa.

PIERCE.

Within the borders of Pierce county the first permanent settlement was made on Puget Sound, in the year 1833. The area of the county is about 1,800 square miles, and the population, according to the census of 1900, is 55,515. A large portion of the surface of the county was originally heavily timbered, although in the western portion of the county there are large areas of park lands or small prairies, dotted over with growths of small fir, cedar and scrub oak. There is, however, a large area of rich agricultural land in this county, notably the Puyallup valley, which in the years past has been noted for its hop crops, that being the principal industry, although vegetables, cereals and hay are produced to perfection. Apples, plums and prunes, together with small fruits, are cultivated, and a ready market for the same is found at the city of Tacoma and other Sound points, as well as the eastern markets.

The principal natural resources of the county are timber and coal. Lumbering is extensively carried on, as well as coal mining on a large scale, the latter of which is the leading industry of the county. Millions of tons have been taken from the mines, consumed in the home markets, and fuel supplied for the vessels of Puget Sound, as well as for shipment to other points. The estimated output for the year 1900 was 595,605 tons. Valuable coking coal is found in the county in large quantities. Most of the coke manufactured from this coal is disposed of to the Tacoma smelter. There are said to exist in the mountainous portions of the county, valuable ledges, carrying copper, gold and

silver. Although most of these discoveries are still in the prospective state, no doubt many of them will prove to be valuable mines with development.

The county is traversed from east to west, and from Tacoma to the southern boundaries, by the main line of the Northern Pacific Railway, which has its terminus at Tacoma. There are also several branches of this company's road in the county. The Western Washington Hospital for the Insane is located at Steilacoom, about ten miles from Tacoma. The Washington Soldiers' Home is located at Orting, in the Puyallup valley, about twenty-four miles from Tacoma.

Dairying has reached an important stage of development in this county. Fourteen dairies are reported, which had an output for the year 1900 of 270,274 pounds of butter, all of which was sold to the Washington market.

There are 113 public schools, of which eighteen are graded. The total valuation of school property in the county is $1,025,222.

The valuation of real estate in the county, as assessed by the State Board of Equalization, for 1900, is $23,546,500, and of personal property, $4,274,308.

	No.	*Value.*
Horses and mules	4,281	$94,372
Cattle	9,159	141,513
Sheep	1,573	2,553
Hogs	2,144	5,554
Totals	17,157	$243,992

Tacoma is the county seat of Pierce county, located on Commencement bay, near the mouth of the Puyallup river. It is the second largest city in the State, as shown by the federal census of 1900, having at that time a population of 37,714. It is the western terminus of the Northern Pacific Railway Company, which company has expended several million dollars in terminal improvements, including machine shops at South Tacoma. The United States Circuit Court for the District of Washington, southern division, is located here. It is also a sub-port of entry, and is the second largest wheat shipping port on the Pacific coast, it being estimated that during the season of 1900-01 over ten million bushels of wheat were shipped from this port.

The city has numerous manufacturing establishments, consisting of sawmills, manufactories, grist mills, foundries, machine shops, etc., and it boasts of now having the largest sawmill in

the world, that of the St. Paul and Tacoma Lumber Company, which during the past year has increased its capacity sufficiently to entitle it to that distinction. A smelter is located here, which has been continuously in operation for a number of years, a report of which will appear elsewhere in this publication. It has first-class daily and weekly papers, many miles of street railway, is the owner of a water system and electric light plant. It is well supplied with banks, has numerous wholesale houses and general supply stores, and is in every sense a modern commercial city. There are regular lines of steamers plying between this port and the ports of China, Japan, Alaska, San Francisco, and in the coastwise trade, and numerous lines of small vessels engaged in Puget Sound traffic. Whitworth College is located here, of which a further report is made elsewhere in this book, and also Annie Wright Seminary, a school for girls. The city has, in addition to the educational institutions mentioned above, a first-class museum, donated by one of her enterprising citizens, Hon. C. P. Ferry. Tacoma has many beautiful residences, and is pre-eminently a city of homes.

There are several other little cities in the county, among which are Puyallup, Sumner, Orting, Buckley, Steilacoom, and several coal mining towns.

SAN JUAN.

San Juan county is situated in the northwestern part of the State, and is composed entirely of islands. It has an area of 500 square miles. The principal islands are San Juan, Orcas, Lopez, Stewart, John's, and Decatur. Its population in 1900 was 2,928. These islands are well adapted for grazing, and there is a considerable portion of agricultural land, marshes and fern prairies. There is much less rainfall in this county than in the other counties of Western Washington, and vegetation is earlier than in the other Sound counties. Dairying is profitable, and fruits of all kinds thrive. Apples, pears, cherries, plums, strawberries and blackberries grow in profusion. Poultry and eggs are shipped from the county in large quantities, and that industry is rapidly coming to the front. The soil in the valleys is what is known as beaver and alder bottom lands. Oats, barley, rye, potatoes, timothy and clover yield large crops, a yield of five tons of timothy to the acre not being at all unusual.

Lime rock of 98 per cent. pure lime is found in unlimited quantities, and Roche Harbor Lime Works is one of the most important industries in the county. This company not only furnishes the greater part of this product consumed in the Sound cities, but ships large cargoes to California, Hawaii and foreign ports. A kindred industry, the staveless barrel factory, also furnishes employment to a large number of men.

There are twenty-six public schools in the county, none of which are graded. The valuation of school property in the county is $15,601. There are eight churches in the county, of the following denominations: Roman Catholic, 1; Methodist Episcopal, 4; Presbyterian, 3.

The assessed valuation of real property in the county is $798,118, and of personal property is $193,438.

	No.	*Value.*
Horses and mules	633	$27,950
Cattle	1,613	28,500
Sheep	6,821	19,264
Hogs	529	2,185
Totals	9,596	$77,899

The county seat of the county is Friday Harbor, situated on San Juan island. It has schools, churches and saw mills, and is the center of the lumber and farming interests of the county. Its population is about 400.

Other towns are Argyle, Decatur, Orcas Island, Roche Harbor and Werner.

SKAGIT.

Skagit county has a frontage of twenty-four miles on Puget Sound, lying between Snohomish and Whatcom counties, and embracing within its borders Fidalgo island. It has an area of 1,800 square miles, and a population in 1900 of 14,272. The county is drained by the Skagit river, which is navigable for some sixty miles from tide water. This river and its tributaries drain a vast watershed, the valleys of which, and the tide marsh lands at its mouth, the Swinomish flats, a large part of which has been diked, constitute the most productive lands in the county. Here there are splendid farms, which are noted for their great crops of oats. In fact, Skagit county, on account of the immense yield of these tide marsh lands, ranks first in the production of oats of any county in the State, the crop in 1900 amounting to 1,526,000 bushels. The lowlands and marshes of the county are also

noted for their large crops of hay and other farm produce. Hops, vegetables and all kinds of fruit flourish, and the land is also well adapted to flax culture. As an agricultural community Skagit is one of the richest counties in Western Washington. Like the other Western Washington counties the uplands toward the mountains are covered with a heavy growth of timber and when cleared makes good grazing and fruit land.

The natural resources of the county are timber and coal. The manufacture of lumber gives employment to a large number of men and is a source of considerable wealth. It is also said that extensive deposits of iron ore are found in the central portion of the county and fire clay is said to exist. In the eastern part of the county mineral ledges bearing gold, silver and lead are being prospected, some of which will no doubt develop into paying mines.

The county is well supplied with railroads. The Seattle & International, a branch of the Northern Pacific, runs through the county from north to south, and the Great Northern Coast Line extends through the county from north to south, and there is in addition to these a branch of the Seattle & Northern running in an easterly and westerly direction from Anacortes to a distance of about sixty miles.

The fishing industry is an important factor in the business of the county, there being a number of canneries at Anacortes.

There are seventy public schools in the county of which fourteen are graded. The total valuation of school property is $69,975. There are seven Roman Catholic and eleven Methodist Episcopal churches in the county.

There are nine creameries in the county which manufactured during 1900, 143,710 pounds of butter, all of which was sold in Washington.

The assessed valuation of real property in the county including improvements, except railroad property, in 1900 was $4,040,027, and of personal property was $846,238.

	No.	*Value.*
Horses and mules	3,226	$83,079
Cattle	8,133	109,866
Sheep	2,722	5,317
Hogs	1,767	3,473
Totals	15,848	$201,735

Mount Vernon is the county seat of the county, located on

the Skagit river and having a population 1,120 according to the federal census of 1900.

LaConner is the oldest town in the county, situated on Swinomish Slough. Its population is 1,082.

Sedro-Woolley, situated at the junction of the Seattle & International and Seattle & Northern railroads, is an important shipping point.

Anacortes, on Fidalgo Island, is the center of the fishing industry of the county. Its population is 1,483.

Hamilton is a coal mining town.

SKAMANIA.

Skamania county belongs to the southern tier of counties, and is bounded on the south by the Columbia river. It constitutes the center of the southern border of the State. It has an area of about sixteen hundred square miles and a population of 1,688. The Cascade mountains run directly through the county, so that the amount of agricultural land is not large. The high peaks and deep gorges of the mountains make the county remarkable for scenic beauty. That part of the county bordering on the Columbia constitutes the greater portion of the land that is tillable. About two thousand acres in this district are already under cultivation, and yield large returns. The principal articles of export from the county are lumber, cordwood and fish. Salmon and sturgeon fishing along the Columbia is an important industry and a source of considerable profit to the inhabitants. The manufacture of lumber and cordwood also furnishes employment to a large number of men.

There are fifteen public schools in the county. The valuation of school property is $2,933.

The assessed valuation of real property in the county is $361,045, and of personal property is $80,843.

	No.	*Value.*
Horses and mules	402	$10,459
Cattle	2,153	18,447
Sheep	160	279
Hogs	1,768	474
Totals	2,875	$29,659

Stevenson, the county seat, is situated on the Columbia river, and has a population of 338.

Other towns are Cape Horn, Mount Pleasant and Nelson.

SNOHOMISH.

Snohomish county has an area of 2,500 square miles and a population of 23,950. It lies about the center of the Puget Sound counties, between Skagit and King. Snohomish county in recent years has made the most rapid strides in development of any county in Western Washington. The northern portion of the county is drained by the Stillaguamish river, and the southern portion by the Snohomish river, which is formed by the junction of the Skykomish and Snoqualmie rivers. The Snohomish and its tributaries are navigable for a distance of from fifty to sixty miles from its mouth. The fertile lands of the valleys have been improved to a considerable extent, and some of the finest and most productive farms in the State cleared up, producing splendid crops of oats, hay, hops and vegetables. On the high lands fruit orchards are taking the place of the former growth of dense forests.

The chief industry of the county in the past has been lumbering and agriculture, but the growth of the cities and the development of the mining and manufacturing and industrial enterprises will soon bring it about so that the first mentioned industries will be but secondary and the latter will take the lead. The canning of fish is also a feature of the county's industry, there being a cannery located at Stanwood, on the Stillaguamish river, which has a capacity of 2,500 cases per day.

The Great Northern Railroad extends through the county from east to west, touching tide water for the first time at Everett, the county seat. The shore line of the Great Northern traverses the county from north to south. The Seattle & International, a branch of the Northern Pacific, and over whose tracks Canadian Pacific trains are run, extends through the central portion of the county from north to south. This line also has a branch from Arlington to Darrington, a distance of twenty-two miles, and from Snohomish to Everett, ten miles, and the Everett & Monte Cristo Railroad extends into the mines a distance of about forty miles.

The principal river being navigable, in addition to having the numerous railroads mentioned above, and being located on Puget Sound, the county has transportation facilities such as recommend it most favorably to persons looking for industrial sites and business locations.

There are fourteen dairies in the county, which manufactured during the year 1900, 214,126 pounds of butter and 19,300 pounds of cheese.

There has been more money expended and more work done toward the development of the mining resources of this county than in any other county in Western Washington, it having within its borders the only shipping mine in the State. The mining districts of the county are the Monte Cristo, Silverton, Sultan, Wallace, Index, Silver Creek and Troublesome, all in the eastern part of the county, which is traversed by the Cascade mountains. The Monte Cristo mines have a large force of men at work operating the mines and concentrator, and regular shipments are made to the smelter at Everett.

There are eighty-three public schools in the county, of which eight are graded. The total valuation of school property in the county is $287,725.

The valuation of real property in the county, as assessed by the state board of equalization in 1900, was $6,464,704, and of personal property, $1,516,094.

	No.	*Value.*
Horses and mules	2,761	$82,763
Cattle	8,535	121,089
Sheep	2,567	4,395
Hogs	1,053	2,087
Totals	14,916	$210,334

Everett, the county seat of the county, is located near the mouth of the Snohomish river, on Port Gardner bay, and has a population of 7,838, as shown by the federal census of 1900. Many of her leading citizens and her commercial body now confidently assert that they have a population of not less than 15,000 when the town of Lowell and the Smelter, adjoining the city limits, are included. These being industrial suburbs, are legitimately a part of the city's population. The city has a grist mill, several saw mills, foundries, machine shops and other manufacturing enterprises, and at Lowell is located one of the largest pulp and paper mills in the country, the report of which is found elsewhere in this book. On the other side of the city, adjoining the limits, is the Everett Smelter, a report of which will be found elsewhere in this book. Everett is a sub-port of entry, having a deputy collector. At the mouth of the Snohomish river the government is now engaged in dredging the harbor and building jetties in process of constructing a fresh water harbor, which

STATE NORMAL SCHOOL, CHENEY, WASH

work has been placed on the continuous appropriation list by an act of congress. The city is well supplied with churches, banks, public school buildings, hotels, etc., and all the other requisites of a progressive and thriving city.

The next most important town in the county is Snohomish, the former county seat, a flourishing little city on the Snohomish river about nine miles from Everett. It has a population of 2,101.

Other towns worthy of mention are Stanwood, Monroe, Arlington, Marysville and Edmonds, all of which are trading points of more or less importance.

SPOKANE.

Spokane is one of the eastern tier of counties, bounded on the east by the Idaho state line. Its general topography is slightly hilly in the southern portion and broken in the central part, with numerous streams of water flowing through deep ravines. The higher levels are covered with a growth of pine and tamarac timber, much of which is of a merchantable quality, and the northern portion of the county is somewhat mountainous. Its principal stream is the Spokane river, traversing the county from east to west, upon which are the Spokane falls, and from these the county seat and principal city of Eastern Washington derives its name. There are numerous small but beautiful lakes within the borders of the county. The county has an area of 1,680 square miles and a population of 57,542.

The southern portion of the county is well adapted to agriculture, and a large acreage of which is devoted to wheat raising, this staple yielding immense crops. Horticulture is an important industry. There are several thousand acres planted in orchards, which produce the finest kind of apples, plums, peaches, pears, and all kinds of small fruits. The business is very profitable, as there is a ready market in Spokane and the mining districts of British Columbia, Northern Idaho and Montana.

In the eastern portion of Spokane county, in what is known as the Spokane prairie, an irrigation system has been constructed, the Spokane Falls Irrigation Company having established soms twenty miles of main ditch and main laterals, with many milee of sub-laterals. These ditches irrigate many thousand acres of land, it being estimated that when the company has completed

its entire system there will be 75,000 acres under irrigation. This will add greatly to the agricultural area of the county.

In the central and southern parts of the county there are large areas of grazing land. Horse raising, beef cattle and dairying are important industries. The two creameries in the county manufactured a total of 280,895 pounds of butter during the year 1900 and 137,500 pounds of cheese during the same period.

A remarkable physical feature of the county is Medical Lake, at which place is located the Eastern Washington Hospital for the Insane. The lake is situated at an altitude of 2,200 feet above the sea level, is a mile long and a half mile wide, and is so named from the medical properties of the water. On this account it has become a popular resort.

There are 160 public schools in the county, of which twelve are graded, and the total valuation of school property in the county is $858,931. The Congregational, Roman Catholic, Methodist Episcopal, Baptist, Episcopalian, United Brethren, Disciples, Presbyterian and other denominations among the churches are represented in the county. There are three hospitals and a number of educational institutions, of which Gonzaga College, under the Roman Catholic dispensation, is the most important.

The valuation of real property in the county, exclusive of railroad improvements, but inclusive of other improvements, is, according to the assessor's return for 1900, $21,191,661, and of personal property is $4,605,095.

	No.	*Value.*
Horses and mules	14,950	$294,670
Cattle	14,747	213,300
Sheep	803	1,200
Hogs	3,864	8,090
Totals	34,364	$517,350

The principal city and the county seat of the county is Spokane, the third largest city in the State, having a population of 36,848, according to the last (1900) census. It is the principal commercial city of Eastern Washington and the center of the great wheat raising and mining industries of the Inland Empire. It is situated on the Spokane river at the falls, which have been harnessed to furnish power for the operation of electric light and other industrial plants and manufacturing enterprises. This fact enables the city to obtain electric service at a very low figure. It owns its water system, and derives a considerable revenue

from its economical management. The city has several saw mills, flouring mills, machine shops and foundries, and numerous other manufacturing establishments. It is well supplied with banks, churches and public buildings of every nature. The Spokane High School building is reported to be the finest public school building on the Coast. Besides this, there are many other beautiful structures of which the citizens are justly proud.

Spokane is the distributing center of all the country lying between the Rocky mountains and the Cascade range, and is an important railroad center, having two transcontinental and five branch railway lines. The city is on the main line of the Northern Pacific and Great Northern and has a branch of the O. R. & N., making connection with the Union Pacific Railroad. The Spokane Falls & Northern runs north up into British Columbia. The Spokane & Palouse, the Spokane & Idaho and the Central Washington branches of the Northern Pacific system radiate in all directions into the agricultural and mining regions tributary to the city, and afford ample transportation facilities for the varied industries of the county. The United States Circuit Court for the District of Washington, eastern division, and the United States land office for the northeastern part of the State are located in Spokane. Fort Wright, a new United States military post, which when completed will be able to accommodate 1,200 soldiers, is situated about five miles from the center of the city.

Other important towns are Cheney, where one of the State normal schools is located; Medical Lake, Peone, Waverly and others of more or less importance.

STEVENS.

Stevens county is in the northeastern corner of the State and is bounded on the north by the British Possessions and on the east by the State of Idaho. The county embraces a portion of the foot hills of the Selkirk mountains and its topography is in general broken by wooded hills and ridges. The timber growth is prolific and well developed. Pine, fir, spruce, cedar and tamarac of superior quality are found in great abundance and the manufacture of this timber into lumber constitutes one of the leading industries of the county. The best portions of the Colville and Pend d'Oreille river valleys lie in Stevens county.

These valleys are dotted with numerous good farms, well stocked with cattle and horses, and producing splendid crops of hay, grain and vegetables. The beautiful Calispel valley is a paradise for farmers and stock raisers, being one of the most profitable agricultural sections in the state. The area is approximately 3,800 square miles, and the population is 10,543.

For scenic beauty the Box Canon of the Pend d'Oreille, about sixty miles below Northport, is unrivalled. Here is located the Metalline mining district which abounds in great ledges of low grade galena. The county seems to lie in the same mineral belt with the rich mines of British Columbia and has bright prospects as regards its mineral wealth. At Chewelah hematite ore in paying quantities is found, and on Deep creek and other streams in the northeastern part of the county there is an abundance of high grade galena, carrying gold and silver. There is a smelter located at Northport.

In addition to the precious metals the county is rich in quarries of marble, onyx, limestone and superior building stone. At Clayton excellent fire clay is to be had and a plant costing upwards of $200,000, equipped with the latest improved machinery, is engaged in manufacturing the crude clay into marketable designs. At Springdale there are extensive lime kilns. There are five creameries and two cheese factories in the county which had in 1900 an output of 80,551 pounds of butter and 77,039 pounds of cheese.

There are eighty schools in the county of which seven are graded. The total value of school property in the county is $31,856. There are nineteen churches in the county as follows: Congregational 3, Roman Catholic 5, Methodist 2, Presbyterian 2, United Brethren 2, Free Methodists 3, Seventh Day Adventists 2. There are two academies, Eells Academy at Colville, under the auspices of the Congegational church, and Columbia River Academy managed by the Seventh Day Adventists, at Kettle Falls.

The total valuation of real property in the county is $1,836,908, and of personal property is $848,821.

	No.	*Value.*
Horses and mules	4,609	$108,139
Cattle	9,245	148,247
Sheep	740	1,489
Hogs	1,822	6,499
Totals	16,316	$259,374

Colville, the county seat, is situated near the Colville river and on the line of the Spokane & Northern railway, and is an important mining center. It has a number of churches, a bank, a brewery, several sawmills, and a newspaper. It is the location of Eells Academy, and has a population of 1,160.

Other towns are Bossburg, Calispel, Chewelah, Springdale, Ione and Northport.

THURSTON.

Thurston county is situated in about the central part of Western Washington, the county seat being at the extreme head of Puget Sound. The county has an area of 700 square miles and a population of 9,927. It has a good many miles of shore line bordering on the Sound, with numerous bays and inlets. In the western part of the county are the Black hills, a spur of the Olympic mountains, the same being heavily timbered lands. There are a number of streams, along which there are rich valleys, and there is considerable prairie land in the county adapted to agriculture.

Thurston county is one of the leading fruit growing counties of the State, the timber lands, when cleared, as well as the prairies, being well adapted to this purpose. There are many thousands of trees, covering hundreds of acres of apples, prunes, pears, cherries, quinces, etc., and in addition to all these, all kinds of berries and small fruits are grown in abundance. A ready market is found for these fruits in the cities of the Sound, and frequent shipments are made from this county to St. Paul, Chicago and other points.

The principal industry of the county in the past has been lumbering, there being seventeen sawmills and shingle mills with a daily capacity of 290,000 feet of lumber and 540,000 shingles. There are also a number of flouring mills, a wooden pipe factory, and other industries. In the southeastern part of the county coal is found, and at Tenino and other points there are valuable quarries of blue and buff sandstone, suitable for building purposes.

The fishing industry is also of more or less importance. This county is particularly noted on account of its oysters, the Puget Sound bivalve having been given the name of "Olympia" from the fact that the county seat of this county seems to have been the center of the oyster industry in past years, and it seems to

flourish best in the waters of Puget Sound adjacent to this city. There are fifty-one creameries and hand separators in the county, with an output for 1900 of 254,187 pounds of butter, all of which was marketed in the State of Washington.

There are sixty-six public schools in the county, of which six are graded. The total valuation of school property is $123,684. Of churches there are two Roman Catholic, one Congregational, five Presbyterian, one Baptist, two Christian, one Episcopalian, and one United Presbyterian. The Catholic church supports St. Martin's College, Providence Academy, and two hospitals in the county.

The assessed valuation of real estate in the county, as returned by the State Board of Equalization, for 1900, is $3,336,215, and of personal propeaty is $939,367.

	No.	*Value.*
Horses and mules	1,959	$63,591
Cattle	6,812	124,932
Sheep	1,904	3,821
Hogs	1,229	3,309
Totals	11,904	$195,653

The county seat of the county is Olympia, which is also the capital of the State of Washington. The city has a population of 4,082, according to the census of 1900. It is situated on Budd's inlet, and is one of the oldest cities of the State. The national government has made some improvement in the harbor, dredging it to admit of navigation by the ordinary fleet of Puget Sound.

A branch of the Northern Pacific Railroad runs through the city, and it has regular steamboat connection with the other cities of the Sound.

Contracts have been let for the remodeling and for the building of the new state capitol building, which, when completed and furnished, will have cost $350,000. Since it is the state capital, it is the residence of the Governor and all the executive officers, and is the location of the Supreme Court and State Library. The city has several sawmills, a clam cannery, flouring mill, and other manufactories. At the town of Tumwater, adjoining Olympia, are found the falls of the Des Chutes river, which falls are utilized for supplying power for the electric lighting and street railway systems of Tumwater and Olympia, and for supplying power for other industrial purposes.

Other towns in the county are Tenino, Yelm and Lacey.

WAHKIAKUM.

Wahkiakum county is in the southwestern part of the State, bounded on the south by the Columbia river and lying between Cowlitz county on the east and Pacific county on the west. It has an area of 274 square miles, and a population of 2,819.

The uplands of the county are covered with a dense growth of timber consisting of yellow fir, larch, cedar, spruce and hemlock. The manufacture of lumber and logging are important industries, and as the timber is cleared away farming is coming more and more into prominence. The chief industry of the county, however, and the one from which it derives the greatest revenue is the fishing industry. There are seven or eight large canneries in the county which employ a large number of men, and furnish a means of livlihood for hundreds of fishermen to keep them supplied with fish. Salmon, sturgeon, shad. smelt and trout are among the varieties of fish taken.

There are twenty-two public schools in the county of which two are graded. The total valuation of school property in the county is $15,900. There are five churches in the county — one Congregational, two Methodist Episcopal and two Lutheran.

The total valuation according to the returns of the State Board of Equalization of the real property in the county, exclusive of improvements, is $705,839, and of peronal property is $147,710.

	No.	*Value.*
Horses and mules	334	$10.570
Cattle	2,026	24,266
Sheep	389	739
Hogs	3,680	1,105
Totals	3,066	$36,680

Cathlamet, situated on the Columbia river, is the county seat. It has a population of 500. There are two public halls, several churches, a newspaper and a cannery in the place. Other towns are Pillar Rock, Bay View and Athens.

WALLA WALLA.

Walla Walla county occupies a position on the southern border of the State, east of central, and is bounded on the north by the Snake river, and on the west by the Columbia. The county has an area of 2,000 square miles, and a population of 18,680. It is not only one of the oldest settled counties in the

State, but also one of the most prosperous. At Waiilatpu, seven miles from Walla Walla, is the site of the old Whitman Mission, established by Dr. Marcus Whitman in 1836. The spot is now marked by a granite monument. In the early days it was thought that the soil was too ashy and light to be valuable for agricultural purposes, so stock raising was about the only industry. Experiment, however, demonstrated that with deep plowing and summer fallowing, marvelous crops of wheat could be raised. Since that time, wheat farming has been the principal industry of the county, and from three to five million bushels of the great staple are harvested in the county annually. Large crops also of oats, barley, flax, alfalfa, and all kinds of vegetables, are raised. The soil is also well adapted for the cultivation of sugar beets, the raising of which is becoming an important branch of agricultural pursuit, and the time may come when sugar will be king.

Another industry which has made the Walla Walla valley famous is the fruit industry. About 2,500 acres of land has been devoted to this important pursuit, with splendid results. Walla Walla fruit is favorably known in all the principal cities of the middle west for its fine quality, and at the annual fruit fair held at Walla Walla, where the products of Walla Walla county alone are displayed, may be seen some of the finest specimens of fruit to be found in the land. The Blalock fruit farm, containing upwards of a thousand acres entirely devoted to the culture of fruit trees, is located near Walla Walla, and is a feature of the county's development in which its citizens take great pride.

In the Walla Walla valley no irrigation is required, the rainfall being sufficient to bring all crops to an unfailing and abundant maturity. The climate is mild in winter, there being but little snow and the mercury seldom registering below the zero mark, and then only for a few days at a time. Although the summers are sometimes quite warm, the evenings are always cool. The Blue mountains occupy the eastern part of the county, and afford an abundant supply of wood and merchantable timber. The largest crops of wheat are harvested on the high foothills of these mountains, where the soil is rich and the rainfall copious.

There are sixty-two public schools in the county, of which eight are graded. The total valuation of school property in the

ADMINISTRATION BUILDING

BILLINGS HALL.

WHITMAN COLLEGE, WALLA WALLA, WASH.

county is $216,860. Of churches there are five Congregational, one Roman Catholic, twelve Methodist, one Lutheran, one Cumberland Presbyterian, two Presbyterian, one M. E. South, one Episcopal, three Christian, one United Brethren, making a total of twenty-eight. There are two hospitals and a number of colleges and academies, among which may be mentioned Whitman College, Walla Walla College, St. Vincent's Academy, St. Paul's School for Girls, and Waitsburg Academy.

The total valuation of real property in the county, according to the assessment rolls for 1900, is $5,643,137, and of personal property is $2,035,429. The county has three dairies, which manufactured in 1900, 133,189 pounds of butter.

	No.	*Value.*
Horses and mules	10,617	$199,106
Cattle	7,407	108,656
Sheep	31,035	53,962
Hogs	3,680	8,710
Totals	52,739	$370,434

The county is traversed from north to south by the O. R. & N. Railroad, and has communication with the Northern Pacific via the W. & C. R., which has branches to Dayton, Hunt's Junction, and several other points in the county. These roads have altogether in the county a mileage of about two hundred and fifty miles, affording ample transportation facilities for the shipment of wheat and other products.

Walla Walla, the county seat of the county, is located on Mill creek, and on the main line of the O. R. & N. Railroad. It has a population, according to the census of 1900, of 10,049. It has been appropriately named the "Garden City" of the State. There are many beautiful homes in the city, surrounded by pretty lawns and tasteful gardens. The streets are lined with shade trees, and the people pride themselves on the careful way in which they keep up the appearance of their homes. There are a number of educational institutions in the city, the most important of which is Whitman College, in whose rapid growth the citizens are deeply interested. There are a number of flouring mills, sash and door factories, foundries, and other industries, as well as numerous banks, churches, and excellent public school buildings. To the west of the city, adjoining the limits, is the United States garrison, Fort Walla Walla, and also on the

west of the city, but further north, is located the state penitentiary, with its jute mill and brick making industries.

Among the other towns in the county, Waitsburg is the most important, with a population of 1,011. Here is located Waitsburg Academy, under the auspices of the Presbyterian church.

Dixie, Eureka, Barryman, Prescott and Wallula are other towns in the county worthy of mention.

WHATCOM.

Whatcom county is bounded on the north by British Columbia and extends from the Gulf of Georgia and Puget Sound on the west to the Cascade mountains on the east. The county embraces more than 2,000 square miles, and has a population of 24,116. Its surface is diversified, the greater portion of the county being rough and mountainous. The principal river of the county is the Nooksack, the two branches of which rise in the mountains and unite to form the main river, which empties into Bellingham bay. Along this river there is a large area of first bottom land, the soil of which is very rich, producing fine crops of hay, oats and vegetables. There are second bottoms where the soil is of a sandy character, well adapted to agriculture and which makes excellent fruit land. The ridges and highlands of the county, when cleared, make good grazing and hay lands and yield abundant crops.

The greatest natural resource of the county thus far is its timber, there being great forests of fir, cedar, spruce and hemlock. The cedar timber is usually found along the streams and marshes rather than on the highlands, which produce the heaviest fir.

The eastern portion of the county, near the summit of the Cascades, is drained by the Skagit river, and also in this portion of the county there have been valuable discoveries of the precious metals, notably in the Mount Baker and Slate Creek districts. In the Mount Baker district there are splendid ledges of gold and silver ores, in some of which free gold is found, and in the Slate Creek district the ores are reported to contain telluride. Two mines in the latter district, the Mamouth and Eureka, are well developed, each having stamp mills, which it is reported are being operated at a large profit to their owners.

Valuable coal deposits exist in the county, the Blue Canyon mine being well developed and shipping a very high grade of coal, about 125,000 tons annually of first-class bituminous coal being the output.

The industries of the county are lumbering, coal mining, agriculture and fishing. There are sixty-three saw mills and shingle mills in the county with a daily capacity of 420,000 feet of lumber and 5,540,000 shingles.

The fishing industry has developed to a remarkable degree in Whatcom county and is one of the chief sources of revenue to the inhabitants. The great Pacific American Fisheries Company has three canneries with a capacity for the season of 360,000 cases, worth $1,800,000. Besides this great concern there are a number of smaller concerns engaged in the canning business and employing a large number of men, among which may be mentioned Ainsworth & Dunn's and the Puget Sound Packing Company's canneries at Blaine and Fairhaven, respectively.

The county is well supplied with railroads. The Great Northern Shore Line extending from the south through Whatcom to Blaine and the international boundary. The Seattle & International crosses the county from north to south, connecting with the Canadian Pacific at Sumas, on the international boundary line, and the B. B. & B. C. from Whatcom to Sumas, and now building an extension into the Baker mining district. Other branch lines have either been built or are in process of construction, which when complete will open up new country and add to the prosperity of the county.

There are numerous lakes in the county, notably Lake Whatcom, a body of water eleven miles long and several miles wide, from which the city of Whatcom receives its water supply.

There are eighty-five school houses in the county, in which for 1900, 137 teachers were employed. Ten of the schools are graded. The total valuation of school property in the county is $265,800. There are four Congregational, six Roman Catholic, fourteen Methodist, seven Presbyterian, and many other churches in the county, the exact number of which could not be ascertained. There are two hospitals in the county, and the State Normal School at Whatcom.

The assessed valuation of real property, including all im-

provements except railroad improvements, in 1900, was $6,507,790 and of personal property was $1,445,085.

	No.	*Value.*
Horses and mules	2,938	$88,940
Cattle	8,862	117,415
Sheep	5,358	12,619
Hogs	2,722	6,493
Totals	19,880	$225,467

There are three creameries in Whatcom county which manufactured in 1900, 118,843 pounds of butter and 8,700 pounds of cheese, all of which was sold in the State of Washington.

The county seat of the county is Whatcom, situated on Bellingham bay. The city has a population of 6,834. The city of Fairhaven, also located on Bellingham bay, has a population of 4,228. These two cities are united by an electric railway system and are practically speaking one city. They have numerous banks, saw mills, machine shops, canneries, and other manufacturing enterprises. The Pacific American Fisheries Company, the largest canning establishment in the world, is located at Fairhaven. It is a sub-port of entry having a deputy collector. Coal, timber, and other products are shipped to all Pacific coast points and other parts of the world. One of the State Normal Schools is located at Whatcom and is in a flourishing condition. A report of this school will be found elsewhere. These cities have beautiful public buildings and splendid school systems with high schools. There are numerous churches and other evidences of culture.

Other towns are Blaine, Nooksack, Sumas, Enterprise, Wickersham and Lynden.

WHITMAN.

Whitman county is one of the eastern tier of counties, being located in the center of the eastern boundary of the state. It is the hub of the famous Palouse country, which has obtained a world wide reputation for its wonderful crops of wheat. The county consists of an extensive upland plateau of rolling prairies, the valleys, which are numerous, providing drainage. The county has an area of 2,160 square miles, and a population in 1900 of 25,360. Nine-tenths of the land in the county is tillable. The soil is deep, rich, black loam, impregnated with the mineral salts necessary to plant life. There are 5,500 farms in the county and 700,000 acres of land under cultivation. Whitman

is the banner agricultural and stock county of the state. She has more acres and a bigger yield in wheat than any other county, having in 1900 a crop of 6,265,000 bushels of wheat. She also takes the lead in the amount of land devoted to fruit culture and the number of car loads shipped. Fifteen thousand acres of land are planted with orchards, and from two to three hundred car loads of fruit shipped annually. The county has taken the prize for four successive years at the Spokane Fruit Fair for the finest exhibit of grains, grasses and fruits. Of horses, cattle and hogs Whitman county has a greater number than any other county. Not only is the number large, but the quality of the stock is of the best. Beef cattle fed on the succulent bunch grass which grows on these rolling prairies attain a fineness of fibre and a degree of fatness which makes them most desirable for the market.

While wheat, fruit and stock take the lead as articles of export, the sugar beet is rapidly coming to the front. The soil is well adapted to the cultivation of this vegetable, samples of which, representing an average, contain from 15 to 20 per cent. sugar, the average requirement at the factory being only twelve per cent.

The O. R. & N. crosses the county from north to south and the Spokane & Palouse, a branch of the Northern Pacific, crosses the county from east to west. These with a number of side branches and spurs have a combined trackage of 280 miles, giving the county ample transportation facilities. There are 161 school houses in the county, eleven graded schools; the number of teachers is 267, and the total valuation of school property $297,242. There are five Congregational, three Roman Catholic, fifteen Methodist, five Christian, four Episcopal, seven United Brethren, seven Baptist, and seven Presbyterian churches in the county, making a total of fifty-three. There is only one hospital.

The assessed valuation of real property, aside from railroad improvements, but including all other improvements, in 1900, was $9,444,130, and of personal property was $2,928,456.

	No.	*Value.*
Horses and mules	25,779	$527,730
Cattle	24,395	361,585
Sheep	29,526	55,080
Hogs	11,291	30,610
Totals	90,991	$975,005

Colfax, the county seat, is situated on the Palouse river and on the Moscow branch of the O. R. & N. railroad. It has a number of churches, a Baptist College, a Catholic academy, a high school, banks, electric light, water works, saw mills, machine shops, a pork packing establishment and a planing mill. The population in 1900 was 2,121.

Pullman, a thriving town, also on the Moscow branch of the O. R. & N., is the location of Washington Agricultural College and School of Science, and is noted for the number of flowing artesian wells within its limits. It has a population of 1,308.

Near Rosalia, in the northern part of the county, it is claimed that oil of good quality has been struck. Other towns of importance are Farmington, Tekoa, and Palouse City.

YAKIMA.

Yakima county lies in the central portion of the State, and is bounded on the north by Kittitas county, and on the south by Klickitat. It is the center of the development of the most important irrigation enterprises of the State, and shows the best results yet attained by tilling the soil with the aid of an artificial water supply. The county has an area of 5,500 square miles, and a population in 1900 of 13,462. The county reaches from the Columbia river, on the east, to the summit of the Cascades, on the west. It is broken in the north by the spurs and foothills of the mountains, while the southern portion extends in broad table lands and plains to the Simcoe range. The Yakima river flows diagonally across the agricultural region, and with its numerous tributaries constitutes an unfailing supply of water for irrigating purposes.

The soil of the hills and plains is basalt and volcanic ash; the valleys are of a similar soil, accompanied with more or less alkali. With the introduction of irrigation on a large scale, the grazing lands are fast becoming transformed into productive farms, yielding large crops of wheat, hops, corn, tobacco, sorghum, choice vegetables, including sweet potatoes; fruits of all kinds, and melons. Immense crops of alfalfa and hops are raised. In fact, the county stands first on the list of hop producers, with a product for the year 1900 of 13,980 bales. Though Whitman county takes the lead as far as horses, cattle and hogs are con-

cerned, Yakima is the banner sheep raising county of the State, with 138,222 of the woolly animals upon its ranges.

The leading industry of the county is agriculture, with its attendant pursuits of horticulture and stock raising. The beautiful Yakima valley, with its side valleys of the Selah, Moxee, Ahtanum, Wenas, Kowichee and Tonnewock creeks and rivers, comprise a region unsurpassed in agricultural resources and beauty of surroundings. The farms for the most part are small, thus affording a maximum of attention to the area cultivated, with correspondingly gratifying results. Here also the farmers seem to take more concern for the appearance of their farms and houses, and as a result many beautiful and commodious homes are to be found in these valleys, surrounded with trees and choice gardens of vines and flowers. If any proof were needed of the success of farming by irrigation, those desiring the evidence could not do better than to go to the Yakima valley, where results have been so flattering and remunerative.

In addition to its agricultural resources, the county has a wealth of standing timber in the western portion of its area, where the foothills and ranges of the Cascades are covered with a heavy growth of pine, fir, tamarac and spruce timber, of a good quality.

There are four dairies in the county, with an output in 1900 of 194,606 pounds of butter, all of which was sold to the local market or within the State of Washington.

There are fifty-one schools in the county, of which five are graded. The total valuation of school property in the county is $98,019. The only private school in the county of any importance is Ahtanum Academy, about eight miles from North Yakima, under the auspices of the Congregational church.

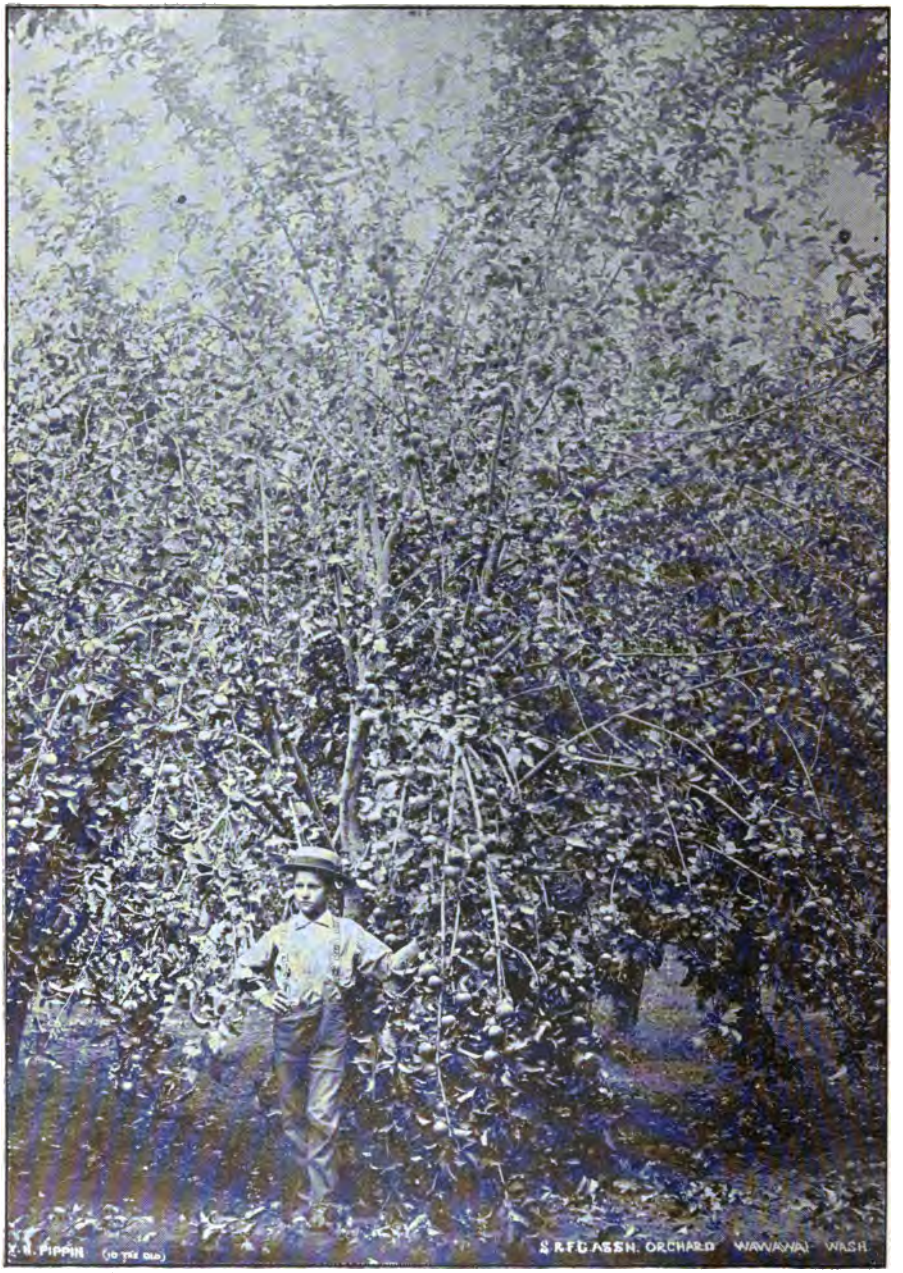
The total valuation of real property in the county, including improvements, as returned by the State Board of Equalization for 1900, was $3,704,041, and of personal property $1,247,651.

	No.	*Value.*
Horses and mules	9,686	$156,747
Cattle	16,407	235,627
Sheep	138,222	246,290
Hogs	2,769	7,665
Totals	167,083	$646,329

North Yakima, the county seat of the county, is on the Yakima river and on the main line of the Northern Pacific rail-

road. It is the center of the business enterprises and farming industry of the Yakima valley and is a growing and prosperous town. It has a number of banks, churches and school buildings, electric lights and a first-class water system. The streets are nicely shaded and lawns and gardens are kept in first-class condition, a fact which adds much to the beauty of the place. The population, according to the census of 1900, was 3,154.

Other towns in the county are Ahtanum, Kennewick, Prosser, Zillah and Fort Simcoe.



A WHITMAN COUNTY ORCHARD.

MISCELLANEOUS.

STATE OFFICERS.

EXECUTIVE DEPARTMENT.

Governor	JOHN R. ROGERS.
Lieutenant Governor	HENRY MCBRIDE.
Secretary of State	SAM H. NICHOLS.
Treasurer	C. W. MAYNARD.
Auditor	JOHN D. ATKINSON.
Attorney General	W. B. STRATTON.
Superintendent of Public Instruction	R. B. BRYAN.
Commissioner of Public Lands	S. A. CALLVERT.

JUDICIAL DEPARTMENT

Name.	*Official Position.*	*Postoffice Address.*
JAMES B. REAVIS	Chief Justice	Olympia.
R. O. DUNBAR	Associate Justice	Olympia.
T. J. ANDERS	Associate Justice	Olympia.
WALLACE MOUNT	Associate Justice	Olympia.
MARK A. FULLERTON	Associate Justice	Olympia.
H. E. HADLEY	Associate Justice	Olympia.
WILLIAM H. WHITE	Associate Justice	Olympia.
C. S. REINHART	Clerk	Olympia.
E. G. KREIDER	Reporter	Olympia.

SUPERIOR JUDGES.

Name.	*District.*	*Residence.*
W. R. BELL	King	Seattle.
ARTHUR E. GRIFFIN	King	Seattle.
BOYD J. TALLMAN	King	Seattle.
G. MEADE EMORY	King	Seattle.
W. H. SNELL	Pierce	Tacoma.
THAD. HUSTON	Pierce	Tacoma.
W. O. CHAPMAN	Pierce	Tacoma.
GEORGE W. BELT	Spokane	Spokane.
WM. E. RICHARDSON	Stevens and Spokane	Spokane.
A. L. MILLER	Clarke, Skamania, Cowlitz and Klickitat	Vancouver.
GEORGE C. HATCH	Jefferson and Island	Port Angeles.
O. V. LINN	Thurston	Olympia.
S. J. CHADWICK	Whitman	Colfax.
GEORGE A. JOINER	Skagit and San Juan	Anacortes.
C. H. NEAL	Adams, Lincoln, Okanogan, Douglas, Chelan and Ferry	Davenport.
JOHN C. DENNY	Snohomish and Kitsap	Everett.
JERE NETERER	Whatcom	Whatcom.
A. C. RICE	Lewis and Wahkiakum	Centralia.
THOS H. BRENTS	Walla Walla	Walla Walla.
FRANK H. RUDKIN	Kittitas, Yakima and Franklin	Yakima.
MASON IRWIN	Chehalis and Mason	Aberdeen.
CHESTER F. MILLER	Columbia, Garfield and Asotin	Dayton.

SENATORS AND REPRESENTATIVES IN CONGRESS.

Name.	*Official Position.*	*Postoffice Address.*
GEORGE TURNER	United States Senator	Spokane.
ADDISON G. FOSTER	United States Senator	Tacoma.
WESLEY L. JONES	Representative in Congress	North Yakima.
FRANCIS W. CUSHMAN	Representative in Congress	Tacoma.

OFFICERS AND COMMISSIONERS APPOINTED BY THE GOVERNOR.

Name.	*Official Position.*	*Residence.*
JAMES A. DRAIN	Adjutant General	Olympia.
A. C. LITTLE	Fish Commissioner and Game Warden	Tacoma.
E. A. MCDONALD	Dairy and Food Commissioner	Seattle.
PETER VAN HOLDERBEKE	Horticultural Commissioner	Tacoma.
WILLIAM BLACKMAN	Commissioner of Labor	Olympia.
CHARLES OWEN	Inspector of Coal Mines	Tacoma.
GEORGE P. WRIGHT	Grain Inspector	Tacoma.
I. P. CALLISON	State Librarian	Olympia.

The Secretary of State is *ex officio* Insurance Commissioner, and Commissioner of Statistics, Agriculture and Immigration. JOHN H. SCHIVELY is Deputy Insurance Commissioner, and A. W. FRATER is Deputy Commissioner of Statistics, Agriculture and Immigration.

The Commissioner of Public Lands, Secretary of State and Superintendent of Public Instruction constitute the Board of State Land Commissioners.

The Governor, Secretary of State and Attorney General constitute the State Library Board.

The State Auditor, Secretary of State and State Land Commissioner constitute the State Board of Equalization.

The Governor, Secretary of State and State Auditor constitute the State Printing Board.

NATIONAL GUARD OF WASHINGTON.

Governor JOHN R. ROGERS, Commander-in-Chief ..... Olympia.
Brig. Gen. JAMES A. DRAIN, Adjutant General ..... Olympia.

First Infantry Regiment; headquarters, Seattle; Col. GEO. B. LAMPING, commanding:
- Company "A" ..... Tacoma.
- Company "B" ..... Seattle.
- Company "C" ..... North Yakima.
- Company "D" ..... Seattle.
- Company "E" ..... Tacoma.
- Company "F" ..... Chehalis.
- Company "G" ..... Vancouver.
- Company "H" ..... Spokane.
- Company "I" ..... Walla Walla.
- Company "K" ..... Spokane.
- Company "L" ..... Colfax.
- Company "M" ..... Whatcom.

Unattached Infantry:
- Company "A" ..... Davenport.
- Company "C" ..... Goldendale
- Company "G" ..... Garfield.

Troop "B," Cavalry ..... Tacoma.

OFFICERS OF COUNTIES.

Following is a complete list of the county officers in the various counties in the state.

Counties.	*County seats.*	*Auditor.*	*Sheriff.*	*County Clerk.*	*Treasurer.*	*County Attorney.*
Adams	Ritzville	L. Laughlin	J. C. Shorno	John C. Staser	A. W. Shaw	C. L. Holcomb.
Asotin	Asotin	John B. Bell	J. L. Wormell	G. W. Woodruff	Charles S. Florence.	Walter Brooks.
Chehalis	Montesano	H. B. Martin	B. F. Huff	J. W. Stamper	Carl Weatherwax	J. A. Hutcheson.
Chelan	Wenatchee	C. J. Trow	F. F. Keller	A. S. Lindsay	H. A. Groham	Frank Reeves.
Clallam	Port Angeles	Frank Sullivan	W. B. Smith	W. L. Church	Walter J. Dyke	G. H. Clementson.
Clarke	Vancouver	W. H. Brewster	John L. Marsh	S. P. Gaither	A. H. Parcel	W. W. Sparks.
Columbia	Dayton	H. E. Gilham	J. D. Smith	L. L. Ellis	F. W. Guernsey	R. B. Brown.
Cowlitz	Kalama	J. H. Wood	E. E. Huntington	I. N. Beigle	Geo. H. Thayer	H. E. McKenny.
Douglas	Waterville	W. H. Anderson	A. W. De Bolt	F. W. McCann	E. M. Bogart	E. K. Pendergast.
Ferry	Republic	A. S. Soule	E. J. Lowry	Wm. H. Murphy	Jas. B. Dugan	M. E. Jesseph.
Franklin	Pasco	W. E. Quinlan	I. J. Davis	W. E. Quinlan	N. R. Sylvester	—
Garfield	Pomeroy	E. M. Pomeroy	J. A. Strain	H. A. Adams	W. H. Dixon	Frank Cardwell.
Island	Coupeville	D. Carl Pearson	Luther Weedin	W. H. McCaslin	Thos. Cranney	—
Jefferson	Port Townsend	Joseph C. Heath	W. C. Hammond	Tom L. Wyckoff	T. J. Tanner	J. M. Ralston.
King	Seattle	G. B. Lamping	Edward Cudihee	C. A. Koepfli	J. W. McConnaughey	Walter S. Fulton.
Kitsap	Port Orchard	F. P. Jameson	D. H. Sackman	Thomas Wilson	C. W. Clausen	J. B. Yakey.
Kittitas	Ellensburg	S. P. Fogarty	Isaac Brown	H. W. Hale	R. Lee Purdin	C. V. Warner.
Klickitat	Goldendale	J. W. Butler	W. C. Burgen	A. E. Coley	A. J. Ahola	W. T. Darch.
Lewis	Chehalis	Albert Schooley	Edward Deggeller	B. H. Rhodes	A. C. St. John	David Stewart.
Lincoln	Davenport	J. W. Anderson	J. H. Gardner	W. H. Yarwood	Isaac J. Minnick	N. T. Caton.
Mason	Shelton	A. L. Bell	Geo. H. Vogtlin	Eli B. Robinson	T. Will McDonald	L. R. Byrne.
Okanogan	Conconully	Henry E. Carr	H. H. Nickell	E. J. Wehee	John M. Pitman	V. H. Hopson.
Pacific	South Bend	J. H. Dalton	Thos. Roney	H. F. Cory	C. E. Huson	J. T. Welsh.
Pierce	Tacoma	J. H. Davis	John Hartman	R. P. Rigney	John B. Reed	Fremont Campbell.
San Juan	Friday Harbor	Wm. O. Clark	John W. Firth	Jas. Frankland	Clarence M. Tucker	Wm. H. Thacker.
Skagit	Mt. Vernon	Grant Neal	Edwin Wells	J. H. Smith	R. O. Welch	M. P. Hurd.
Skamania	Stevenson	F. W. Kale	J. T. Totten	F. W. Kale	Frank Marble	C. H. Moor.
Snohomish	Everett	W. M. Ross	Peter Zimerman	U. L. Collins	C. L. Lowry	H. D. Cooley.
Spokane	Spokane	H. H. Hubbard	W. J. Doust	E. K. Erwin	Geo. Mudgett	Horace Kimball.
Stevens	Colville	Richard Nagle	C. A. Ledgerwood	Fred Y. Wilson	Joseph F. Lavigne	J. E. M. Bailey.
Thurston	Olympia	A. L. Callow	Jesse T. Mills	W. M. Nunn	A. A. Phillips	Geo. H. Funk.
Wahkiakum	Cathlamet	Jesse Baker	M. S. Hougen	Link C. Burton	David West	J. C. McFadden.
Walla Walla	Walla Walla	C. N. McLean	A. Frank Keese	Schuyler Arnold	W. B. Hawley	Oscar Cain.
Whatcom	Whatcom	W. R. Sybert	W. J. Brisbin	O. J. Holen	F. F. Handschy	A. E. Meade.
Whitman	Colfax	C. G. Raby	Jas. B. Mackay	W. W. Renfrew	W. J. Windus	R. J. Neergaard.
Yakima	North Yakima	E. E. Kelso	H. L. Tucker	G. L. Allen	W. B. Dudley	W. P. Guthrie.

NOTE.—The County Auditor is the clerk of the Board of County Commissioners. The County Clerk is *ex-officio* clerk of the Superior Court.

TABLE 1.—POPULATION OF WASHINGTON, 1860 TO 1900.

Census Years.	Population.	Increase.	
		Number.	Per Ct.
1900	518,103	168,713	48.3
1890	349,390	274,274	365.1
1880	75,116	51,161	218.6
1870	23,955	12,361	106.6
1860	11,594	.....	.....

TABLE 2.—POPULATION OF WASHINGTON, BY COUNTIES. 1860 TO 1900.

COUNTIES.	1900.	1890.	1880.	1870.	1860.	1850.
The State	518,103	349,390	75,116	23,955	11,594	1,201
Adams	4,840	2,098	.....	.....	.....	.....
Asotin	3,366	1,580	.....	.....	.....	.....
Chehalis	15,124	9,249	921	401	285	.....
Chelan	3,931	.....	.....	.....	.....	.....
Clallam	5,603	2,771	688	408	149	.....
Clarke	13,419	11,709	5,490	3,081	2,384	643
Columbia	7,128	6,709	7,103	.....	.....	.....
Cowlitz	7,877	5,917	2,062	730	406	.....
Douglas	4,926	3,161	.....	.....	.....	.....
Ferry	4,562	.....	.....	.....	.....	.....
Franklin	486	696	.....	.....	.....	.....
Garfield	3,918	3,897	.....	.....	.....	.....
Island	1,870	1,787	1,087	626	294	.....
Jefferson	5,712	3,368	1,712	1,268	531	.....
King	110,053	63,989	6,910	2,120	302	.....
Kitsap	6,767	4,624	1,738	866	544	.....
Kittitas	9,704	8,777	.....	.....	.....	.....
Klickitat	6,407	5,167	4,055	329	230	.....
Lewis	15,157	11,499	2,600	888	384	558
Lincoln	11,969	9,312	.....	.....	.....	.....
Mason	3,810	2,826	639	289	162	.....
Okanogan	4,689	1,467	.....	.....	.....	.....
Pacific	5,983	4,358	1,645	738	420	.....
Pierce	55,515	50,940	3,319	1,409	1,115	.....
San Juan	2,928	2,072	948	554	.....	.....
Skagit	14,272	8,747	.....	.....	.....	.....
Skamania	1,688	774	809	133	173	.....
Snohomish	23,950	8,514	1,387	599	.....	.....
Spokane	57,542	37,487	4,262	.....	996	.....
Stevens	10,543	4,341	1,245	734	.....	.....
Thurston	9,927	9,675	3,270	2,246	1,507	.....
Wahkiakum	2,819	2,526	1,598	270	42	.....
Walla Walla	18,680	12,224	8,716	5,300	1,318	.....
Whatcom	24,116	18,591	3,137	584	352	.....
Whitman	25,360	19,109	7,014	.....	.....	.....
Yakima	13,462	4,429	2,811	432	.....	.....

TABLE 3.—INCREASE IN POPULATION OF WASHINGTON, BY COUNTIES 1890 TO 1900. (*Decrease.)

Counties.	Increase.		Counties.	Increase.	
	Number.	Per Ct.		Number.	Per Ct.
The State	168,713	48.3	Klickitat	1,240	24 0
Adams	2,742	130.7	Lewis	3,658	31.8
Asotin	1,786	113 0	Lincoln	2,657	28.5
Chehalis	5,875	63.5	Mason	984	34.8
Chelan	3,931	.....	Okanogan	3,222	219.6
Clallam	2,882	102.2	Pacific	1,625	37.3
Clarke	1,710	14.6	Pierce	4,575	9.0
Columbia	419	6.2	San Juan	856	41.3
Cowlitz	1,960	33.1	Skagit	5,525	63.2
Douglas	1,765	55.8	Skamania	914	118.1
Ferry	4,562	.....	Snohomish	15,436	181.3
Franklin	*210	*30.2	Spokane	20,055	53.5
Garfield	21	0.5	Stevens	6,202	142.9
Island	83	4.6	Thurston	252	2.6
Jefferson	*2,656	*31.7	Wahkiakum	293	11.6
King	46,064	72.0	Walla Walla	6,456	52.8
Kitsap	2,143	46.3	Whatcom	5,525	29.7
Kittitas	927	10.6	Whitman	6,251	32.7
			Yakima	9,033	204.0

There are ninety incorporated cities, towns and villages in Washington, for which the population in 1900 is separately returned, and these incorporated places are presented in table 5 in alphabetical order, being abstracted from table 4, in which they are presented in detail under the counties in which they are severally situated.

TABLE 5.—POPULATION OF THE INCORPORATED CITIES, TOWNS AND VILLAGES OF WASHINGTON, 1890 AND 1900.

Cities, Towns and Villages.	Population.		Cities, Towns and Villages.	Population.	
	1900.	1890.		1900.	1890.
Aberdeen town	3,747	1,638	North Yakima city	3,154	1,585
Anacortes town	1,476	1,131	Oakesdale town	928	528
Asotin town	470	200	Ocosta village	166	.....
Auburn city	489	740	Olympia city	4,082	4,698
Ballard city	4,568	1,178	Orting town	728	623
Blaine city	1,592	.....	Palouse city	929	1,119
Bossburg village	247	.....	Pasco town	254	.....
Buckley town	1,014	.....	Pataha City	157	.....
Castle Rock town	750	681	Pomeroy city	958	661
Centralia city	1,600	2,026	Port Angeles city	2,321	.....
Chehalis city	1,775	1,309	Port Orchard town	197	.....
Cheney town	781	647	Port Townsend city	3,443	4,558
Colfax city	2,121	1,649	Prosser town	229	.....
Colton town	251	.....	Pullman city	1,308	868
Columbia town	337	.....	Puyallup city	1,884	1,732
Colville town	594	539	Republic city	2,050	.....
Cosmopolis town	1,004	287	Ritzville town	761	.....
Davenport town	1,000	396	Rockford town	433	644
Dayton city	2,216	1,880	Rosalia town	379	248
Edmonds city	474	.....	Roslyn town	2,786	1,484
Elberton town	297	.....	Seattle city	80,671	42,837
Ellensburg city	1,737	2,768	Sedro-Woolley town	885	.....
Elma town	894	345	Shelton town	833	648
Everett city	7,838	.....	Sidney village	254	226
Fairhaven city	4,228	.....	Snohomish city	2,101	1,993
Farmington town	434	418	South Bend city	711	.....
Garfield town	697	317	Spangle town	331	308
Gilman town*	700	.....	Spokane city	36,848	19,922
Goldendale city	738	702	Sprague city	695	1,689
Hamilton town	392	203	Steilacoom town	1,015	270
Hoquiam city	2,608	1,302	Sumas city	319	.....
Ilwaco town	584	517	Sumner town	531	580
Kalama town	554	325	Tacoma city	37,714	36,006
Kelso town	694	354	Tekoa town	717	301
Kent town	755	853	Toledo town	285	276
Kettle Falls town	297	.....	Tumwater town	270	410
La Conner town	564	398	Uniontown town	404	279
Latah town	253	232	Vancouver city	4,006	3,545
Lynden town	365	560	Waitsburg city	1,011	817
Marysville city	728	262	Walla Walla city	10,049	4,709
Medical Lake town	516	617	Waterville town	482	293
Montesano town	1,194	1,632	Wenatchee town	451	.....
Mt. Vernon town	1,120	770	Wilbur city	595	410
New Whatcom city	6,834	.....	Winlock town	655	.....
Northport city	787	.....	Yakima City town	287	196

*Issaquah P. O.

Of the above named ninety incorporated places, there are twenty that have a population in 1900 of more than 2,000, and of these only six have a population of more than 5,000, namely, Seattle, with 80,671; Tacoma, with 37,714; Spokane, with 36,-

848; Walla Walla, with 10,049; Everett, with 7,838; and New Whatcom, with 6,834 inhabitants.

Seattle, Spokane and Tacoma are the only cities in Washington that have a population in 1900 of more than 25,000, and for these three cities a summary is presented in table 6, showing their population from 1870 to 1900, inclusive, together with the increase by number and per cent. during each decade.

TABLE 6.—POPULATION OF SEATTLE, SPOKANE AND TACOMA, 1870 TO 1900.

Census Years.	*Seattle.*			*Spokane.*			*Tacoma.*		
	Population.	Increase.		Population.	Increase.		Population.	Increase.	
		No.	Per ct.		No.	Per ct.		No.	Per ct.
1900	80,671	37,834	88.3	36,848	16,926	85.0	37,714	1,708	4.7
1890	42,837	39,304	1,112.5	19,922	19,572	5,592.0	36,006	34,908	3,179.2
1880	3,533	2,426	219.2	350	.....	.....	1,098	1,025	1,404.1
1870	1,107	.....	.....	.....	.....	.....	73	.....	.....

IMPORTS AND EXPORTS OF MERCHANDISE INTO AND FROM THE CUSTOMS DISTRICT OF PUGET SOUND, WASHINGTON, DURING THE YEAR ENDING JUNE 30, 1900.

IMPORTS.

ARTICLES.	*Quantities.*	*Values.*
Free of Duty.		
Articles, the produce of the U. S., brought back	.....	$144,331
Copper—Ore.....tons.	3,815	1,027,932
Pigs, bars, etc.....lbs.	56,494	5,609
Fibers, vegetable—Jute.....tons.	89	5,446
Furs and fur skins, undressed	.....	14,716
Household and personal effects, etc	.....	58,334
Silk—Raw.....lbs.	1,257,882	4,810,963
Waste.....lbs.	19,580	7,807
Tin, in bars, blocks, etc.....lbs.	116,564	34,571
Wood—Logs and round timber.....M feet.	9,171	46,592
Other	.....	3,394
All other free articles	.....	22,391
Total free of duty	.....	$6,182,086
Dutiable.		
Breadstuffs—Oats.....bush.	21,501	$10,443
Cement.....lbs.	55,124,950	206,201
Coal.....tons.	6,898	25,721
Earthen and chinaware	.....	18,191
Fibers, vegetable, manufactures of	.....	42,303
Fruits—Oranges.....lbs.	153,133	2,533
Hay.....tons.	117	2,040
Hops.....lbs.	27,065	7,792
Iron and Steel Manufactures—		
Tin plates, terne plates, etc.....lbs.	615,120	24,565
Lead, in ore.....lbs	5,660,061	167,287
Malt liquors (in bottles).....doz.	14,402	14,380
Matting, and mats for floors, etc	.....	12,327
Paper, and manufactures of	.....	9,810
Provisions—Meats preserved	.....	4,542
Rice and rice flour.....lbs.	1,896,223	36,188
Salt.....lbs.	2,307,188	8,108
Silk, manufactures of	.....	4,876

EXPORTS.

ARTICLES.	*Quantities.*	*Dollars.*
Domestic.		
Animals—Horses and mules.....No.	4,548	$480,476
All other	.....	96,328
Breadstuffs—Wheat.....bush.	3,566,719	2,078,905
Wheat flour.....bbls.	1,037,583	2,965,746
All other	.....	312,193
Cars and carriages	.....	93,318
Chemicals, dyes and medicines	.....	57,429
Coal, bituminous.....tons.	35,700	110,832
Cotton—Raw.....lbs.	56,721,348	4,568,374
Manufactures—cloths.....yds.	8,732,166	397,631
Other	.....	92,284
Eggs.....doz.	292,827	49,570
Fish—Salmon (canned).....lbs.	1,477,232	144,059
Other	.....	80,493
All other	.....	54,214
Fruits	.....	153,344
Gunpowder and other explosives	.....	80,977
Hay.....tons.	14,183	203,668
Instrument for scientific purposes	.....	48,003
Iron and Steel, and Manufactures of—		
Bars and rods of steel.....lbs.	1,195,028	42,067
Rails for railways.....tons.	2,698	94,300
Structural iron and steel.....tons.	547	43,141
Wire.....lbs.	4,726,200	113,131
Pipes and fittings	.....	93,970
All other	.....	897,035
Leather—Sole.....lbs.	238,610	67,244
Malt liquors (in bottles).....doz.	220,163	278,045
In other coverings.....galls.	84,589	19,249
Oils, mineral	.....	60,116
Paper, and manufactures of	.....	478,707
Provisions—Bacon and hams.....lbs.	1,247,956	128,965
Butter.....lbs.	275,233	67,428
All other	.....	287,034

IMPORTS AND EXPORTS OF MERCHANDISE—CONCLUDED.

IMPORTS.

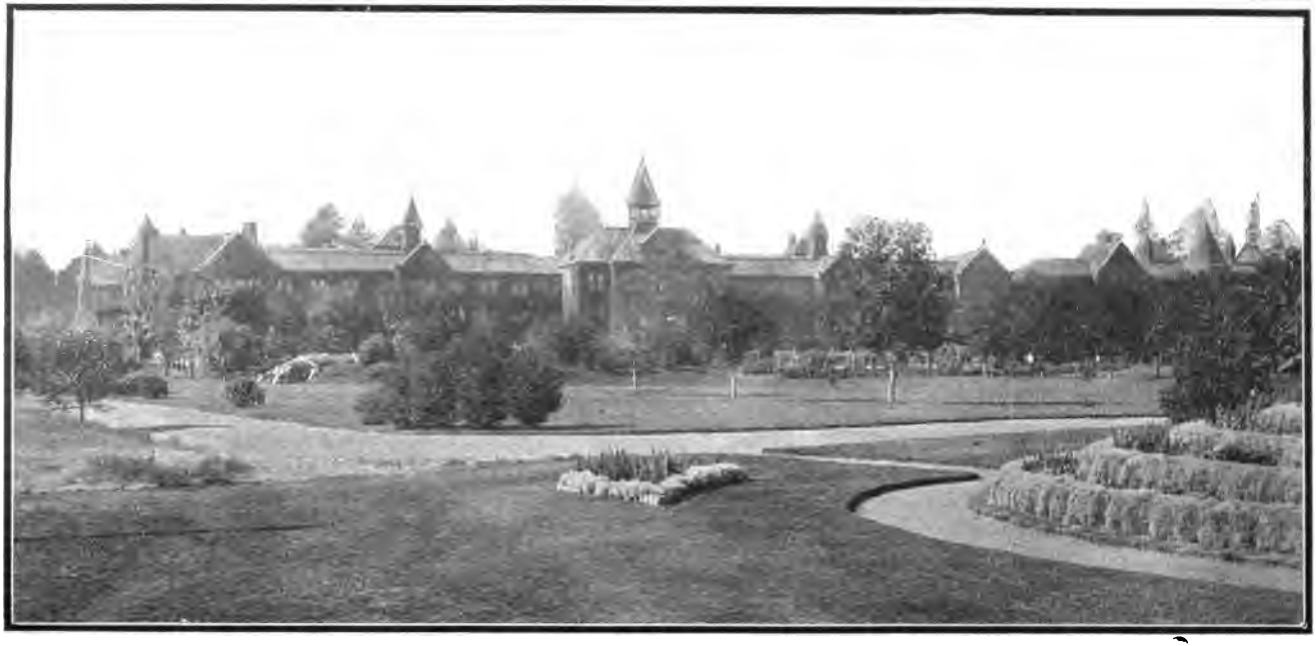
ARTICLES.	*Quantities.*	*Values.*
Dutiable.		
Spirits—Brandy.....proof galls.	275	$943
Other.....proof galls.	32,403	53,661
Sugar, above No. 16.....lbs.	595,644	17,862
Tea.....lbs.	1,061,989	139,258
Vegetables.....	.....	14,200
Wines.....	.....	24,229
Wood—Timber, hewn.....cubic ft.	209,890	11,441
Lumber—board, deals, etc.....M ft.	648	7,843
All other dutiable articles.....	.....	99,733
Total dutiable.....	.....	$966,477
Total imports.....	.....	$7,148,563

EXPORTS.

ARTICLES.	*Quantities.*	*Dollars.*
Domestic.		
Tobacco—Leaf.....lbs.	1,984,963	$198,008
Manufactures of.....	.....	382,099
Wood—Boards, deals, etc.....M ft.	170,143	1,752,841
Other lumber.....	.....	146,286
Manufactures of.....	.....	367,351
All other articles.....	.....	244,871
Total domestic exports.....	.....	$17,829,232
Total foreign exports.....	.....	78,875
Total exports.....	.....	$17,903,107

TREASURY DEPARTMENT, BUREAU OF STATISTICS, December 10, 1900.

J. N. WHITNEY, *Acting Chief of Bureau.*



FRONT VIEW, WESTERN WASHINGTON HOSPITAL FOR INSANE.

TREASURY DEPARTMENT, BUREAU OF STATISTICS.
DECEMBER 10, 1900.

IMPORTS AND EXPORTS INTO AND FROM PUGET SOUND FROM AND TO FOREIGN COUNTRIES, DURING THE YEAR ENDING JUNE 30, 1900.

COUNTRIES.	IMPORTS.	EXPORTS.		
		Domestic.	*Foreign.*	*Total.*
Austria-Hungary	$44	.....	.....	.....
Belgium	66,802	$108,207	.....	$108,207
France	1,978	6,780	.....	6,780
Germany	107,542	40,566	.....	40,566
Italy	340	.....	.....	.....
Netherlands	645	.....	.....	.....
Spain	1,191	.....	.....	.....
Sweden and Norway	38	.....	.....	.....
United Kingdom	80,941	1,957,409	$868	1,958,277
Dominion of Canada	1,718,609	2,891,550	21,632	2,913,182
Mexico	7,019	87,244	.....	87,244
West Indies—Cuba	1,210	.....	.....	.....
Argentina	.....	15,806	.....	15,806
Chile	.....	101,066	.....	101,066
Ecuador	.....	29,043	.....	29,043
Peru	.....	76,059	.....	76,059
Chinese Empire	1,136,946	1,056,923	35,277	1,092,200
Russian China	.....	74,815	.....	74,815
East Indies—British	45,847	8,280	.....	8,280
Dutch	22	.....	.....	.....
Hong Kong	52,388	1,551,704	2,644	1,554,348
Japan	3,914,659	6,051,843	6,113	6,057,956
Korea	.....	58,646	.....	58,646
Russia—Asiatic	49	360,711	.....	360,711
Asia, all other	.....	5,480	.....	5,480
Aukland, Fiji, etc	120	21,251	.....	21,251
British Australasia	148	589,913	.....	589,913
French Oceanica	.....	9,100	.....	9,100
Hawaiian Islands	11,881	1,822,445	621	1,823,066
Philippine Islands	144	1,055,828	.....	1,055,828
British Africa	.....	316,849	3,781	320,630
Portuguese Africa	.....	31,714	2,939	34,653
Totals	$7,148,563	$17,829,232	$73,875	$17,903,107

J. N. WHITNEY,
Acting Chief of Bureau.

NUMBER AND TONNAGE OF AMERICAN AND FOREIGN VESSELS, SAIL AND STEAM, ENTERED AND CLEARED AT PUGET SOUND, WASHINGTON, YEAR ENDING JUNE 30, 1900.

ENTERED.

American.				*Foreign.*				*Total.*			
Sail.		Steam.		Sail.		Steam.		Sail.		Steam.	
No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
231	145,688	1,090	690,162	147	113,800	361	154,147	378	259,488	1,451	844,309

Percentage American vessels, 72.22; tonnage, 75.72.
Percentage foreign vessels, 27.78; tonnage, 24.28.

CLEARED.

American.				*Foreign.*				*Total.*			
Sail.		Steam.		Sail.		Steam.		Sail.		Steam.	
No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
278	164,219	1,155	724,507	151	122,867	362	161,930	399	287,086	1,517	886,437

Percentage American vessels, 73.22; tonnage, 75.73.
Percentage foreign vessels, 26.78; tonnage, 24.27.

ASSESSED VALUATION OF REAL AND PERSONAL PROPERTY IN WASHINGTON FOR 1900.

	COUNTIES.	Total number of acres of land, exclusive of town and city lots.	Total number of acres of improved land.	Land valuation, exclusive of improvements.		Valuation of improvements on lands.		Valuation of city or town lots, exclusive of improvements.	Valuation of improvements on town or city lots.	Aggregate valuation of all real property, including improvements, except railroad track.	Total valuation of real and personal property, including railroad tracks.	
				Average value per acre.	Total value.	Average value per acre.	Total value.					
1	Adams	738,009	228,396	$1 50	$1,107,013	$2 50	$570,990	$60,000	$80,000	$1,818,003	$3,096,617	1
2	Asotin	127,108	30,115	3 25	413,101	4 00	120,460	60,000	46,640	640,201	968,469	2
3	Chehalis	714,640	12,154	7 25	5,181,140	17 50	212,695	594,308	428,750	6,416,893	7,977,400	3
4	Chelan	165,052	8,574	1 50	247,578	4 00	84,296	110,094	60,400	452,368	1,560,319	4
5	Clallam	237,794	7,176	7 25	1,724,006	17 50	125,580	420,000	94,955	2,364,541	2,571,598	5
6	Clarke	263,618	37,383	8 25	2,174,848	12 50	467,287	600,000	290,980	3,533,115	4,094,740	6
7	Columbia	302,703	139,611	4 80	1,452,974	2 50	249,027	200,000	350,545	2,852,546	3,600,078	7
8	Cowlitz	448,415	10,048	4 80	2,152,392	12 50	125,600	130,000	132,655	2,540,647	3,292,047	8
9	Douglas	1,045,668	129,267	1 25	1,307,085	2 50	323,167	50,000	57,620	1,787,872	3,369,516	9
10	Ferry	.....	.....	2 50	1,219,550*	8 00	.....	200,000	166,010	1,585,560	1,793,281	10
11	Franklin	403,379	2,766	50	201,689	8 00	22,128	50,000	15,220	289,037	1,141,684	11
12	Garfield	273,462	106,799	3 25	888,751	2 50	266,997	71,425	97,850	1,325,023	1,904,645	12
13	Island	113,539	7,690	7 25	823,187	12 50	96,125	35,807	22,970	978,089	1,081,586	13
14	Jefferson	139,704	3,716	4 80	670,579	17 50	65,030	750,000	299,710	1,785,319	2,109,050	14
15	King	668,216	34,680	12 50	8,352,700	17 50	606,900	25,000,000	9,353,075	43,312,675	53,127,229	15
16	Kitsap	222,003	2,904	7 25	1,609,521	17 50	50,820	124,001	39,174	1,823,516	2,214,730	16
17	Kittitas	457,198	45,276	2 50	1,142,995	8 00	362,208	316,729	465,995	2,287,927	4,029,982	17
18	Klickitat	533,663	36,343	2 50	1,334,157	4 00	145,372	80,000	103,705	1,663,284	2,342,231	18
19	Lewis	685,513	32,732	7 25	4,969,969	8 00	261,856	350,000	233,052	5,819,877	6,954,360	19
20	Lincoln	1,073,906	344,741	3 25	3,490,194	2 50	861,852	200,000	300,000	4,852,046	7,353,436	20
21	Mason	349,190	3,032	8 25	1,134,867	12 50	37,900	71,021	75,000	1,318,788	1,625,654	21
22	Okanogan	23,869	1,538	1 50	35,803	12 50	19,225	200,000	20,000	95,028	551,247	22
23	Pacific	386,298	1,925	4 80	1,854,230	17 50	33,687	294,584	116,145	2,298,646	2,832,173	23
24	Pierce	582,281	20,324	10 00	5,822,810	17 50	355,670	12,000,000	5,368,020	23,546,500	28,925,047	24
25	San Juan	98,976	8,426	4 80	475,084	12 50	105,325	17,250	16,760	614,419	769,810	25
26	Skagit	352,588	35,394	8 25	2,908,851	12 50	442,425	409,115	279,636	4,040,027	5,454,337	26
27	Skamania	70,178	2,618	4 80	336,854	8 00	20,944	1,985	1,262	361,045	443,868	27
28	Snohomish	508,061	19,765	8 25	4,191,508	12 50	247,062	1,876,139	650,000	6,464,704	9,166,587	28
29	Spokane	895,457	241,330	4 80	4,298,198	2 50	603,325	10,412,859	5,839,224	21,153,601	27,545,366	29
30	Stevens	506,970	22,500	2 50	1,267,425	8 00	180,000	250,000	139,483	1,836,908	3,511,183	30
31	Thurston	413,276	10,602	3 25	1,343,147	12 50	132,525	1,252,953	607,590	3,336,215	4,813,460	31
32	Wahkiakum	127,941	2,933	4 80	614,116	17 50	51,327	13,206	27,190	705,839	846,802	32
33	Walla Walla	609,447	309,565	4 80	2,925,345	2 50	773,912	931,540	1,012,340	5,643,137	9,110,129	33
34	Whatcom	319,402	29,393	8 25	2,635,066	8 00	235,144	2,878,028	718,137	6,466,375	8,441,033	34
35	Whitman	1,134,985	654,654	4 80	5,447,928	2 50	1,636,635	657,565	917,105	8,659,233	13,086,375	35
36	Yakima	991,822	45,987	2 50	2,479,555	8 00	367,896	436,377	420,213	3,704,041	5,870,454	36
	Totals	15,974,331	2,630,357	.....	$78,234,206	.....	$10,311,392	$60,424,986	$28,852,411	$177,822,995	$237,576,528	

*Mining claims. (These two tables are from the last Biennial Report of the State Auditor, 1900.)

ASSESSED VALUATION OF LIVE STOCK IN WASHINGTON FOR 1900.

	COUNTIES.	*Horses, Mules and Asses.*			*Cattle.*			*Sheep.*			*Hogs.*			
		No.	Value.	Average value.	No.	Value.	Average value.	No.	Value.	Average value.	No.	Value.	Average value.	
1	Adams	9,238	$140,585	$15 20	7,358	$104,170	$14 15	20,132	$36,005	$1 78	938	$2,100	$2 23	1
2	Asotin	5,062	66,138	13 06	7,762	102,628	13 09	16,456	32,912	2 00	2,132	4,538	2 16	2
3	Chehalis	1,727	56,861	32 92	7,266	103,718	14 27	2,882	5,477	1 90	1,665	3,653	2 19	3
4	Chelan	1,812	38,031	20 91	2,874	48,327	16 81	2,911	5,800	1 99	764	2,140	2 80	4
5	Clallam	908	25,701	28 30	3,521	49,328	14 90	2,493	4,763	1 90	567	1,374	2 40	5
6	Clarke	2,598	61,095	23 51	8,065	137,090	16 99	1,258	2,440	1 93	1,766	3,085	1 74	6
7	Columbia	7,430	130,215	17 52	6,474	94,645	14 62	21,725	37,955	1 75	3,016	5,655	1 87	7
8	Cowlitz	1,743	43,392	25 00	6,398	81,648	12 00	1,322	2,369	2 00	1,615	2,278	1 00	8
9	Douglas	11,762	165,749	14 09	15,952	247,643	15 52	10,848	19,036	1 75	1,807	5,583	3 06	9
10	Ferry	572	15,871	24 23	303	6,250	20 62	.....	.....	.....	41	689	16 80	10
11	Franklin	5,842	22,941	3 92	454	5,693	12 53	33,150	58,012	1 71	22	59	2 63	11
12	Garfield	6,289	97,790	15 39	7,147	88,560	12 39	10,977	19,095	1 74	2,157	4,440	2 05	12
13	Island	656	24,670	39 13	1,683	24,522	15 01	2,003	4,007	2 00	669	1,513	2 26	13
14	Jefferson	536	11,275	21 00	2,204	36,200	16 00	613	1,226	2 00	461	1,331	3 00	14
15	King	5,845	178,769	30 58	13,597	232,869	17 13	3,010	6,157	2 05	2,406	9,597	3 99	15
16	Kitsap	711	15,159	21 32	2,336	32,615	13 96	613	632	1 03	441	1,114	2 52	16
17	Kittitas	4,579	104,396	22 82	12,170	221,261	18 18	30,035	58,908	1 96	2,244	7,157	3 18	17
18	Klickitat	7,339	143,209	19 51	9,778	151,767	15 52	65,884	115,113	1 75	4,681	13,578	2 90	18
19	Lewis	3,585	83,694	23 35	12,144	159,313	13 12	2,676	4,923	1 84	6,122	9,476	1 54	19
20	Lincoln	15,191	343,316	22 60	13,853	188,055	13 57	2,019	3,260	1 61	3,630	11,224	3 09	20
21	Mason	582	14,050	24 14	2,209	28,450	12 88	819	1,468	1 79	181	334	1 85	21
22	Okanogan	4,980	79,109	16 04	9,157	174,834	19 09	2,098	4,196	2 00	688	1,634	2 56	22
23	Pacific	659	10,781	16 36	4,005	42,009	10 49	949	1,468	1 53	271	597	2 20	23
24	Pierce	4,281	94,372	22 04	9,159	141,513	15 45	1,573	2,553	1 62	2,144	5,554	2 59	24
25	San Juan	633	27,950	44 15	1,613	28,500	17 66	6,821	19,264	2 82	529	2,185	4 13	25
26	Skagit	3,326	83,079	25 28	8,183	109,866	13 50	2,722	5,317	1 95	1,767	3,473	1 96	26
27	Skamania	402	10,459	26 01	2,158	18,447	8 56	160	279	1 68	160	474	2 96	27
28	Snohomish	2,761	82,763	29 97	8,535	121,089	14 07	2,567	4,395	1 71	1,053	2,087	1 98	28
29	Spokane	14,950	294,670	19 71	14,747	213,300	14 46	803	1,290	1 60	3,864	8,090	2 09	29
30	Stevens	4,609	103,139	22 42	9,245	148,847	16 09	740	1,489	2 01	1,822	6,499	3 57	30
31	Thurston	1,959	63,591	32 46	6,812	124,932	18 34	1,904	3,821	2 00	1,229	3,309	2 69	31
32	Wahkiakum	334	10,570	31 65	2,026	24,266	11 96	389	789	1 87	317	1,105	3 48	32
33	Walla Walla	10,616	199,106	18 75	7,407	108,656	14 67	31,035	53,962	1 73	3,680	8,710	2 36	33
34	Whatcom	2,938	88,940	30 27	8,862	117,415	13 24	5,358	12,619	2 16	2,722	6,493	2 37	34
35	Whitman	25,779	527,730	20 47	24,395	361,585	14 82	29,526	55,080	1 87	11,291	30,610	2 71	35
36	Yakima	9,686	156,747	16 18	16,497	235,627	14 36	138,222	246,290	1 78	2,767	7,665	2 77	36
	Totals	181,870	$3,615,903	.....	276,154	$4,115,638	.....	456,693	$832,320	.....	71,579	$179,353	.....	

POSTOFFICES IN THE STATE OF WASHINGTON.

Postoffice.	*County.*
A.	
Aberdeen	Chehalis
Acme	Whatcom
Addy	Stevens
Adelaide	King
Adell	Chehalis
Adna	Lewis
Agate	Lewis
Ahtanum	Yakima
Alderton	Pierce
Alki	Whitman
Alkire	Ferry
Alma	Okanogan
Almira	Lincoln
Almota	Whitman
Alpha	Lewis
Alpowa	Garfield
Alto	Columbia
Alton	Klickitat
Amboy	Clarke
Amelia	Mason
Anacortes	Skagit
Anatone	Asotin
Aquarium	King
Arcadia	Mason
Argyle	San Juan
Ariel	Cowlitz
Arletta	Pierce
Arlington	Snohomish
Artesian	Yakima
Arctic	Chehalis
Artondale	Pierce
Arzina	Stevens
Ashford	Pierce
Asotin	Asotin
Auburn	King
Avon	Skagit
Axford	Chehalis
B.	
Badger	Whatcom
Baird	Douglas
Baker	Skagit
Ballard	King
Ballow	Mason
Bangor	Kitsap
Barberton	Clarke
Baring	King
Barron	Whatcom
Barry	Douglas
Battleground	Clarke
Bay Center	Pacific
Bayview	Skagit
Beach	Whatcom
Beaver	Clallam
Bee	Pierce
Belfast	Skagit
Bellevue	King
Belmont	Whitman
Bemis	Adams
Benston	Pierce
Berryman	Walla Walla
Bickleton	Klickitat
Biglake	Skagit
Bingen	Klickitat
Birchbay	Whatcom
Birdsview	Skagit
Bismarck	Pierce
Bissell	Stevens
Black Diamond	King
Black River	King
Blaine	Whatcom
Blanchard	Pierce
Blewett	Chelan
Blockhouse	Klickitat
Blue Canyon	Whatcom
Bluecreek	Stevens
Bluff	Whatcom
Bly	Asotin
Blyn	Clallam
Bodie	Okanogan
Boistfort	Lewis
Bolster	Okanogan
Bossburg	Stevens
Boston	Clallam
Bothell	King
Boundary	Stevens
Brays	Douglas
Breidablik	Kitsap
Bremer	Lewis
Bremerton	Kitsap
Brewster	Okanogan
Bridgeport	Douglas
Brinnon	Jefferson
Brookfield	Wahkiakum
Brooklyn	Pacific
Brownsville	Kitsap
Brush Prairie	Clarke
Bryant	Snohomish
Buckingham	Douglas
Buckley	Pierce
Bucoda	Thurston
Bucyrus	Clallam
Burley	Kitsap
Burlington	Skagit
Burnett	Pierce
Burton	King
Bushpoint	Island

POSTOFFICES IN THE STATE OF WASHINGTON—CONTINUED.

Postoffice.	*County.*
C.	
Calispell	Stevens
Camas	Clarke
Camden	Stevens
Canto	Chehalis
Capehorn	Skamania
Caples	Cowlitz
Carbonado	Pierce
Carrollton	Cowlitz
Carson	Skamania
Cascades	Skamania
Castlerock	Cowlitz
Cathlamet	Wahkiakum
Catlin	Cowlitz
Cedarhome	Snohomish
Cedar Mountain	King
Cedarville	Chehalis
Cedonia	Stevens
Center	Jefferson
Centerville	Klickitat
Centralia	Lewis
Chard	Garfield
Charleston	Kitsap
Chattaroy	Spokane
Chautauqua	King
Chehalis	Lewis
Chelan	Chelan
Chelan Falls	Chelan
Cheney	Spokane
Chenowith	Skamania
Cherryvalley	King
Chesaw	Okanogan
Chester	Spokane
Chewelah	Stevens
Chico	Kitsap
Chimacum	Jefferson
Chinook	Pacific
Chiwaukum	Chelan
Christopher	King
Cinebar	Lewis
Clallam	Clallam
Claquato	Lewis
Clark	Lincoln
Clarkston	Asotin
Clayton	Stevens
Clearbrook	Whatcom
Clearlake	Skagit
Clearwater	Jefferson
Cle Elum	Kittitas
Cleveland	Klickitat
Clifton	Mason
Clinton	Island
Clover	Okanogan
Clyde	Walla Walla
Cokedale	Skagit
Colby	Kitsap
Colfax	Whitman
College Place	Walla Walla
Colton	Whitman
Columbia City	King
Columbus	Klickitat
Colville	Stevens
Conconully	Okanogan
Connie	Chehalis
Conway	Skagit
Copper	Garfield
Copalis	Chehalis
Cora	Lewis
Cosmopolis	Chehalis
Coulee City	Douglas
Coupeville	Island
Covello	Columbia
Cowiche	Yakima
Cowlitz	Lewis
Crabcreek	Lincoln
Craige	Asotin
Crescent	Lincoln
Creston	Lincoln
Crystalsprings	Kitsap
Cumberland	King
Cunningham	Adams
Curlew	Ferry
Custer	Whatcom
D.	
Daisy	Stevens
Damon	Chehalis
Darrington	Snohomish
Dartford	Spokane
Davenport	Lincoln
Dayton	Columbia
Decatur	San Juan
Deepcreek	Spokane
Deepriver	Wahkiakum
Deerharbor	San Juan
Deerpark	Spokane
Delight	Adams
Delphi	Thurston
Delta	Whatcom
Deming	Whatcom
Derby	King
Des Moines	King
Detroit	Mason
Dewatto	Mason
Dewey	Skagit
Diamond	Whitman
Dieringer	Pierce
Dishman	Spokane
Dixie	Walla Walla
Dodd	Asotin
Doebay	San Juan
Dole	Clarke
Dot	Klickitat
Doty	Lewis
Douglas	Douglas
Dragoon	Spokane

POSTOFFICES IN THE STATE OF WASHINGTON—CONTINUED.

Postoffice.	*County.*
Dryad	Lewis
Duckabush	Jefferson
Duncan	Spokane
Dungeness	Clallam
Dunlap	King
Dusty	Whitman
Dyer	Douglas
E.	
Eaglecliff	Wahkiakum
Eaglegorge	King
Eagleton	Lewis
Earl	Lincoln
East Clallam	Clallam
Easton	Kittitas
Eastsound	San Juan
East Spokane	Spokane
Eatonville	Pierce
Echo	Stevens
Eddyville	King
Edgecomb	Snohomish
Edgewood	Pierce
Edison	Skagit
Edmonds	Snohomish
Edwall	Lincoln
Egypt	Lincoln
Ehrlich	Skagit
Elbe	Pierce
Elberton	Whitman
Elgin	Pierce
Elk	Spokane
Ellensburg	Kittitas
Elma	Chehalis
Endicott	Whitman
Enterprise	Whatcom
Entiat	Chelan
Enumclaw	King
Ephrata	Douglas
Equality	Skagit
Ethel	Lewis
Etna	Clarke
Eufaula	Cowlitz
Eureka	Walla Walla
Everett	Snohomish
Evergreen	Jefferson
Everson	Whatcom
Exa	Clallam
Expansion	Klickitat
F.	
Fairfax	Pierce
Fairfield	Spokane
Fairhaven	Whatcom
Fairholme	Clallam
Fall City	King
Fallon	Whitman
Farmer	Douglas
Farmington	Whitman
Felida	Clarke
Ferndale	Whatcom
Fernhill	Pierce
Fidalgo	Skagit
Fife	Pierce
Fir	Skagit
Fisher	Clarke
Fletcher	Adams
Florence	Snohomish
Forest	Lewis
Forks	Clallam
Fort Canby	Pacific
Fort Casey	Island
Fort Flagler	Jefferson
Fort Simcoe	Yakima
Fort Steilacoom	Pierce
Frances	Pacific
Frankfort	Pacific
Franklin	King
Fredonia	Skagit
Fremont	King
Friday Harbor	San Juan
Fruitland	Stevens
Fulda	Klickitat
Fulton	Lewis
G.	
Garfield	Whitman
Gate	Thurston
Geneva	Whatcom
Georgetown	King
Gertrude	Pierce
Getchell	Snohomish
Gettysburg	Clallam
Gig Harbor	Pierce
Gilmer	Klickitat
Glencove	Pierce
Gleneden	Lewis
Glenwood	Klickitat
Goldbar	Snohomish
Goldbasin	Snohomish
Goldendale	Klickitat
Goodwin	Stevens
Goshen	Whatcom
Gould City	Garfield
Govan	Lincoln
Granddalles	Klickitat
Grandmound	Thurston
Granite Falls	Snohomish
Granville	Chehalis
Grays River	Wahkiakum
Greenlake	King
Greenriver	King
Griffith	Adams
Griswold	San Juan
Grove	Mason
Guemes	Skagit
Guy	Whitman

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Postoffice.	*County.*
H.	
Hadlock	Jefferson
Hamilton	Skagit
Hanson Ferry	Asotin
Hardan	Whatcom
Harmony	Lewis
Harrington	Lincoln
Harstine Island	Mason
Hartford	Snohomish
Hartland	Klickitat
Hartline	Douglas
Harts	Pierce
Harvey	Stevens
Hatton	Adams
Hay	Whitman
Hayes	Clarke
Haynie	Whatcom
Hazard	Spokane
Heligate	Lincoln
Hesseltine	Lincoln
Highland	Spokane
Hillhurst	Pierce
Hillsdale	Whatcom
Hillyard	Spokane
Hockinson	Clarke
Holly	Kitsap
Home	Pierce
Homevalley	Skamania
Hoodsport	Mason
Hooper	Whitman
Hopewell	Clarke
Hoquiam	Chehalis
Hot Springs	King
Houghton	King
Humptulips	Chehalis
Hunters	Stevens
Huntsville	Columbia
Hurn	Lewis
Husum	Klickitat
I.	
Ilia	Garfield
Ilwaco	Pacific
Independence	Lewis
Index	Snohomish
Inglewood	King
Island	Island
Issaquah	King
J.	
Johnson	Whitman
Jorden	Snohomish
Juanita	King
Junction	Jefferson
Juno	Chehalis
K.	
Kalama	Cowlitz
Kamilche	Mason
Kaylor	Ferry
Keese	Whatcom
Keller	Ferry
Kelso	Cowlitz
Kennewick	Yakima
Kent	King
Kerns	Cowlitz
Kettle Falls	Stevens
Kingston	Kitsap
Kiona	Yakima
Kirkland	King
Knab	Lewis
Knappton	Pacific
L.	
Lacenter	Clarke
Lacey	Thurston
Laconner	Skagit
Lacrosse	Whitman
Ladu	Cowlitz
Lake	Asotin
Lakebay	Pierce
Lake Cushman	Mason
Lakeside	Chelan
Lake Tapps	Pierce
Lakeview	Pierce
Lamar	Walla Walla
Lamona	Lincoln
Langley	Island
Lapush	Clallam
Larchmont	Pierce
Larene	Lincoln
Latah	Spokane
Latona	King
Laurel	Whatcom
Lawrence	Whatcom
Lawton	Snohomish
Leahy	Douglas
Leavenworth	Chelan
Lebam	Pacific
Leber	Pierce
Leland	Jefferson
Lemolo	Whatcom
Lester	King
Lewisville	Clarke
Lexington	Cowlitz
Ley	Lincoln
Liberty	Kittitas
Licking	Whatcom
Lincoln	Douglas
Lind	Adams
Lisabeula	King
Lithow	Cowlitz
Littlefalls	Lewis
Littlerock	Thurston
Lockwood	Spokane
London	Chehalis
Longbeach	Pacific
Longbranch	Pierce
Lookout	Skagit

AQUEDUCT CARRYING IRRIGATING CANAL FLUME ACROSS THE WENATCHEE RIVER.

POSTOFFICES IN THE STATE OF WASHINGTON—CONTINUED.

Postoffice.	*County.*
Loomis	Okanogan
Loonlake	Stevens
Lopez	San Juan
Lowell	Snohomish
Lucas	Klickitat
Lyle	Klickitat
Lyman	Skagit
Lynden	Whatcom
M.	
McCormick	Lewis
McDonald	Clallam
McMillin	Pierce
McMurray	Skagit
Mabton	Yakima
Machias	Snohomish
Macklin	Pierce
Madrone	Kitsap
Malott	Okanogan
Maltby	Snohomish
Manila	Spokane
Manor	Clarke
Mansford	Skagit
Manzaneta	Kitsap
Maplevalley	King
Marble	Stevens
Marblemount	Skagit
Marcus	Stevens
Marengo	Columbia
Marietta	Whatcom
Marion	Pierce
Markham	Chehalis
Marshall	Spokane
Martin	Kittitas
Marysville	Snohomish
Mason	Mason
Matlock	Mason
Maury	King
Mayfield	Lewis
Mayview	Garfield
Mazama	Okanogan
Mead	Spokane
Meadow	Thurston
Medical Lake	Spokane
Melbourne	Chehalis
Mendota	Skamania
Menlo	Pacific
Menno	Adams
Meridian	Pierce
Methow	Okanogan
Meyers Falls	Stevens
Mica	Spokane
Midland	Pierce
Milan	Spokane
Miles	Lincoln
Mineral	Lewis
Mission	Chelan
Mohler	Lincoln
Mold	Douglas
Molson	Okanogan
Mondovi	Lincoln
Monohan	King
Monroe	Snohomish
Montecristo	Snohomish
Montesano	Chehalis
Moore	Chelan
Moran	Spokane
Morton	Lewis
Moscow	Lincoln
Mosher	Snohomish
Mossyrock	Lewis
Mountainview	Whatcom
Mounthope	Spokane
Mount Pleasant	Skamania
Mount Vernon	Skagit
Mukilteo	Snohomish
N.	
Nahcotta	Pacific
Napavine	Lewis
Nasel	Pacific
Neahbay	Clallam
Nellita	Kitsap
Nelson	Ferry
Nemah	Pacific
Nespelem	Okanogan
Newaukum	Lewis
Newcastle	King
Newell	Island
Newhall	San Juan
New Kamilche	Mason
Newskah	Chehalis
Nile	Yakima
Nooksack	Whatcom
Nordland	Jefferson
Norman	Snohomish
Northbend	King
Northcove	Pacific
Northport	Stevens
North Yakima	Yakima
Novelty	King
O.	
Oakesdale	Whitman
Oakharbor	Island
Oakpoint	Cowlitz
Oakville	Chehalis
O'Brien	King
Oocsta	Chehalis
Odessa	Lincoln
Olalla	Kitsap
Olema	Okanogan
Olequa	Cowlitz
Olga	San Juan
Olympia	Thurston
Oneida	Wahkiakum
Ophir	Okanogan

POSTOFFICES IN THE STATE OF WASHINGTON—CONTINUED.

Postoffice.	*County.*
Orcas	San Juan
Orchards	Clarke
Orillia	King
Orondo	Douglas
Oroville	Okanogan
Orting	Pierce
Osceola	King
Oso	Snohomish
Ostrander	Cowlitz
Otis	San Juan
Otter	Chehalis
Outlook	Yakima
Oysterville	Pacific
P.	
Padilla	Skagit
Paha	Adams
Palmer	King
Palouse	Whitman
Pampa	Whitman
Paradise	Spokane
Parker	Yakima
Parkland	Pierce
Pasco	Franklin
Pataha City	Garfield
Pateros	Okanogan
Peach	Lincoln
Pearson	Kitsap
Pe Ell	Lewis
Penawawa	Whitman
Peola	Garfield
Peone	Spokane
Perry	Columbia
Peshastin	Chelan
Pialschie	King
Piedmont	Clallam
Pilchuck	Snohomish
Pine City	Whitman
Pineflat	Klickitat
Ping	Garfield
Pins	Jefferson
Pioneer	Clarke
Plaza	Spokane
Pleasant	Klickitat
Point no Point	Kitsap
Point Roberts	Whatcom
Pomeroy	Garfield
Pontiac	King
Port Angeles	Clallam
Port Blakeley	Kitsap
Port Crescent	Clallam
Port Discovery	Jefferson
Porter	Chehalis
Port Gamble	Kitsap
Port Ludlow	Jefferson
Port Madison	Kitsap
Port Orchard	Kitsap
Port Stanley	San Juan
Port Townsend	Jefferson
Port Williams	Clallam
Poulsbo	Kitsap
Prairie	Skagit
Prescott	Walla Walla
Preston	King
Prevost	San Juan
Proebstel	Clarke
Prosser	Yakima
Pullman	Whitman
Puyallup	Pierce
Q.	
Queets	Jefferson
Quilcene	Jefferson
Quillayute	Clallam
Quinlault	Chehalis
R.	
Rainier	Thurston
Randle	Lewis
Ravenna	King
Rayburn	Chehalis
Reardan	Lincoln
Redmond	King
Reedville	Kitsap
Rena	Clallam
Renton	King
Republic	Ferry
Reynolds	Lewis
Rice	Stevens
Richardson	San Juan
Richmond	King
Ridgefield	Clarke
Riffe	Lewis
Riparia	Whitman
Ritzville	Adams
Riverside	Okanogan
Robe	Snohomish
Roche Harbor	San Juan
Rochester	Thurston
Rockford	Spokane
Rock Island	Chelan
Rocklyn	Lincoln
Rollingbay	Kitsap
Rome	Whatcom
Roosevelt	Lewis
Rosalia	Whitman
Rosburg	Wahkiakum
Rosedale	Pierce
Roslyn	Kittitas
Ross	King
Roxwell	Clarke
Roy	Pierce
Royal	Clallam
Ryan	Stevens
S.	
Saint Andrews	Douglas
Saint Helen	Cowlitz

POSTOFFICES IN THE STATE OF WASHINGTON—CONTINUED.

Postoffice.	*County.*
Saint John	Whitman
Salkum	Lewis
Samish	Skagit
San de Fuca	Island
Sandypoint	Island
Sappho	Clallam
Sara	Clarke
Satsop	Chehalis
Sauk	Skagit
Saxon	Whatcom
Scotia	Stevens
Scott	Klickitat
Seabeck	Kitsap
Seabold	Kitsap
Seattle	King
Sedro Woolley	Skagit
Seguin	Clallam
Semiahmoo	Whatcom
Sharon	Lewis
Shawnee	Ferry
Shelton	Mason
Sherlock	Thurston
Sherman	Lincoln
Sherwood	King
Shillibah	Clallam
Shuwah	Clallam
Sightly	Cowlitz
Silvana	Snohomish
Silver	Okanogan
Silvercreek	Lewis
Silverdale	Kitsap
Silverlake	Cowlitz
Silverton	Snohomish
Skagit	Skagit
Skamokawa	Wahkiakum
Skye	Skamania
Skykomish	King
Snohomish	Snohomish
Snoqualmie	King
Southbend	Pacific
Southpark	King
South Prairie	Pierce
South Seattle	King
Southside	Douglas
Spanaway	Pierce
Spangle	Spokane
Spokane	Spokane
Spokane Bridge	Spokane
Sprague	Lincoln
Springdale	Stevens
Springfield	Pierce
Staley	Whitman
Stanwood	Snohomish
Starbuck	Columbia
Startup	Snohomish
Stehekin	Chelan
Steilacoom	Pierce
Stella	Cowlitz
Steptoe	Whitman
Stevenson	Skamania
Stones	King
Strandell	Whatcom
Stuck	King
Sulphur Springs	Lewis
Sultan	Snohomish
Sumas	Whatcom
Summit	Chehalis
Sumner	Pierce
Sunnydale	King
Sunnyside	Yakima
Sunset	Whitman
Sunshine	Pacific
Swan	Clallam
Swofford	Lewis
Sylvan	Pierce

T.

Tacoma	Pierce
Tampico	Yakima
Tanwax	Pierce
Tatoosh	Clallam
Teanaway	Kittitas
Tekoa	Whitman
Tenino	Thurston
Thatcher	San Juan
Theon	Asotin
Thornton	Whitman
Thornwood	Skagit
Thorp	Kittitas
Tipso	Lincoln
Tokeland	Pacific
Toledo	Lewis
Tolt	King
Toppenish	Yakima
Toroda	Okanogan
Touchet	Walla Walla
Toutle	Cowlitz
Tower	Cowlitz
Tracyton	Kitsap
Trafton	Snohomish
Trent	Spokane
Troutlake	Klickitat
Tucker	Cowlitz
Tulalip	Snohomish
Tumtum	Stevens
Tumwater	Thurston
Tunnel	Chelan
Twin	Clallam
Twisp	Okanogan
Tyee	Clallam
Tyler	Spokane

U.

Underwood	Skamania
Union	Mason
Uniontown	Whitman

POSTOFFICES IN THE STATE OF WASHINGTON—CONCLUDED.

Postoffice.	*County.*
Urban	Skagit
Usk	Stevens
Utsaladdy	Island
V.	
Valley	Stevens
Vanasselt	King
Vanburen	Whatcom
Vance	Lewis
Vancouver	Clarke
Vanwyck	Whatcom
Vanzandt	Whatcom
Vashon	King
Vaughn	Pierce
Velma	Stevens
Verndale	Lewis
Vesta	Chehalis
Victor	Mason
View	Clarke
W.	
Wabash	King
Wahl	Whatcom
Waitsburg	Walla Walla
Waldron	San Juan
Walla Walla	Walla Walla
Wallula	Walla Walla
Washougal	Clarke
Washtucna	Adams
Waterford	Wahkiakum
Waterloo	Stevens
Waterville	Douglas
Waukon	Lincoln
Waverly	Spokane
Wawawai	Whitman
Wayside	Spokane
Webster	Lewis
Wehesville	Okanogan
Welch	Spokane
Welcome	Whatcom
Wellington	King
Wenas	Yakima
Wenatchee	Chelan
Westbranch	Spokane
Western	Chehalis
Westport	Chehalis
West Seattle	King
Westsound	San Juan
Whatcom	Whatcom
White Salmon	Klickitat
Wickersham	Whatcom
Wilbur	Lincoln
Wilcox	Whitman
Wildwood	Lewis
Wilkeson	Pierce
Willapa	Pacific
Willis	Adams
Wilson	Lewis
Wilsoncreek	Douglas
Windom	Lewis
Winlock	Lewis
Winona	Whitman
Winthrop	Okanogan
Wiser	Whatcom
Wollochet	Pierce
Woodinville	King
Woodland	Cowlitz
Wynooche	Chehalis
Y.	
Yakima	Yakima
Yale	Cowlitz
Yelm	Thurston
Yesler	King
Z.	
Zillah	Yakima

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ACKNOWLEDGMENT.

The illustrations published herein are a feature of this work, which doubtless will be greatly appreciated by all who read it, as each and every one is taken from actual photographs.

The greater part of the half-tone cuts from which these pictures have been printed were furnished by various publishers, chambers of commerce, and individuals, and we beg to acknowledge the courtesy of the heads of various state institutions, the chambers of commerce of Spokane, Tacoma, Seattle, Everett and Whatcom; *The Argus, Ranch and Range*, A. D. Eshelman, and the Denny-Blaine Land Company, all of Seattle; Hon. Wilfred Allen, of the Pullman *Argus*, and A. L. Craig, general passenger agent of the O. R. & N. Ry., all of whom have contributed in this manner to this work.

A. W. FRATER,
Deputy Commissioner.